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LIFE AFTER NEPHRECTOMY

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Whenever told that removal of one kidney is indicated, a patient always, or nearly always, asks three questions: 1. Can I live with only one kidney? 2. Will it shorten my life? 3. Will the removal of one kidney handicap me and limit my work and activities?

It is extremely interesting to note the great regularity with which these questions are asked and, in most instances, they are asked before the question of operative mortality is discussed. It almost seems to be intuitive.

To the first question one answers "yes" without hesitation and cites many instances illustrative of the fact that patients live for a long time after a nephrectomy, and one further fortifies the remark with the statement that some patients are born with only one kidney and live to a ripe old age only to die of some intercurrent disease or some accident. In response to the second question one answers "no." In reply to the third question one answers in the affirmative by stating that certain precautions must be taken.

However, if the patient asks one to present evidence in support of these statements, then one finds oneself in a position of embarrassment as the result of a lack of information on these points. In order to be able to answer the question How about life after nephrectomy? based on evidence I thought it might be interesting and desirable to study in detail a series of patients on whom nephrectomy had been performed.

This paper is based on a study of 156 patients. They were asked to report in person at the Presbyterian Hospital, where the examinations were carried out. Neither technical details of the operation nor operative mortality and morbidity will be dealt with here. The number of cases does not represent all the patients on whom I have performed nephrectomy but represents only those patients who, in response to my request for study and examination, presented themselves at the hospital. It was my opinion that this was the only accurate method so far as evaluation is concerned, since a study based on answers to a questionnaire would be open to doubt.

In this study the following data were recorded: intervals that elapsed between nephrectomy and examination; presence or absence of urinary symptoms as well as general symptoms; question of whether or not the patient had pain in the remaining kidney; results of the physical examination; changes in weight since the operation; blood pressure before operation and on examination; analysis of the urine, including chemical examination and culture; nonprotein nitrogen of the blood; results of the Newburgh test; results of examination of the genitourinary tract with roentgen rays and intravenous pyelograms.

In table 1 is given a list of the various lesions for which nephrectomy was performed.

NEPHRECTOMY FOR TUBERCULOSIS

Forty-nine patients on whom I performed nephrectomy for renal tuberculosis presented themselves for examination. The youngest patient was 10 years of age, the oldest 75; the average age was 44 years and 6 months. The longest period between the operation and examination was twenty-four years and eleven months, the shortest one year and four months; the average time was ten years and three months.

Urinary Symptoms.—Fifteen patients had some burning and frequency of urination. An analysis of these cases disclosed that the symptoms in 2 cases were due to benign prostatic hypertrophy. An analysis of the remaining 13 cases is given in table 2.

Two patients had an attack of acute pyelitis, one four years, the other six years after nephrectomy, and 1 patient passed a stone.

Pain in the Remaining Kidney.—There was only one instance in this group in which the patient subsequently developed pain in the remaining kidney.

Physical Examination.—The results of the physical examination are given in table 4.

Weight.—In 4 cases there has been some loss of weight. The largest gain was 62 pounds (28 Kg.).

Blood Pressure Studies.—In only 7 cases were changes in the blood pressure noted. In 4 there was an increase and in 3 a decrease, as presented in table 5.

Urinalysis.—Albumin was present in 6 cases and pus in 13 cases. Tubercle bacilli were found in smears or in guinea pigs or both in 10 cases.

Cultures.—Positive cultures were obtained in 14 cases (table 6).

Blood Chemistry.—In 10 cases there were no records of preoperative studies of the nonprotein nitrogen. Of the remaining 39 cases the studies disclosed that the nonprotein nitrogen values were increased in 9 cases. In only 3 cases were the values above 50 mg. per hundred cubic centimeters of blood, as recorded in table 7.

Newburgh Test.—The test was performed on 35 of the 49 patients. Of the 35, 24 passed and 11 did not, a percentage of 69 disclosing normal function.

Roentgen Examination.—In 11 cases the intravenous urograms revealed definite changes from the normal,

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such as dilatation of the pelvis, clubbing of the calices with irregularity, and dilatation of the ureter. In 5 of these 11 cases a proved tuberculosis of the remaining kidney was present.

Scoliosis was present in only 3 cases.

TABLE 1.—*Lesions for Which Nephrectomy Was Performed*

	Patients
Renal tuberculosis	49
Renal calculi	42
Hydronephrosis	40
Renal tumor	11
Miscellaneous	14
Total	156

TABLE 2.—*Urinary Symptoms in Thirteen Cases of Tuberculosis*

No.	Sex	Age	Diagnosis	Comment
1	♀	44	Hypertension	
2	♀	40	Hypertension	
3	♀	43	Contracted bladder	
4	♀	58	Contracted bladder	
5	♀	46	Contracted bladder	
6	♀	49	Tuberculosis of bladder	
7	♂	46	Tuberculosis of bladder ?	Presacral neurectomy
8	♀	51	Tuberculosis of bladder	
9	♂	33	Tuberculosis of bladder and kidney	
10	♂	48	Tuberculosis of bladder and kidney	
11	♀	44	Tuberculosis of bladder and kidney, bilateral	
12	♀	53	Tuberculosis of bladder and kidney	
13	♀	44	Tuberculosis of bladder and kidney	

TABLE 3.—*General Symptoms*

	Patients
Edema of ankles	3
Dyspnea	4
Headache	2
Constipation	2
Spastic bowel	2
Fatigue	1

NEPHRECTOMY FOR CALCULI

Forty-two patients who had nephrectomy for stone presented themselves for examination. The oldest patient was 76; the youngest 19; the average age was 51. The longest period between the operation and the examination was twenty-one years, the shortest period one year and one month; the average period was seven years and nine months.

Pain in the Remaining Kidney.—There were 4 patients in this group who subsequently developed pain in the remaining kidney. The pain suffered by 2 of these patients was due to the presence of stones and of 1 to recurring attacks of pyelonephritis; no reason for the pain of 1 was found other than enlargement of the kidney outline as shown in roentgenograms.

Weight.—The weight either remained the same as it was prior to operation or it increased. Three patients gained 50 pounds (22.7 Kg.).

Blood Pressure Studies.—Seven patients showed changes in the blood pressure readings. Four showed an increase and 3 a reduction; the blood pressure of 1 prior to operation was not recorded, although twenty years later it was abnormally high, as listed in table 10.

Urinalysis.—Albumin was present in 6 patients (in 2 due to stones in the kidney), and pus was present in 11. Positive cultures were obtained in the urine of 15 patients, as shown in table 11.

An analysis of the group in which urinary conditions were noted discloses that the cause of the positive findings in the urine of 6 patients (33⅓ per cent) is quite independent of nephrectomy, since in 3 the findings are due to benign prostatic obstruction and in the other 3 to chronic prostatitis. In 3 the changes are due to stones in the remaining kidney. In 3 there are present definite hypertension and cardiac enlargement. In 6 cultures were positive. One patient has had several attacks of pyelitis. The remaining 5 have no symptoms and were unaware of the fact that their urines were positive on culture. Of the entire group of 42 patients, positive cultures were obtained in 15.

Blood Chemistry.—There was an increase in the nonprotein nitrogen values in the blood in 14 cases. In only 3 cases were the readings over 50 mg. per hundred cubic centimeters of blood, and in 11 cases the readings were between 40 and 50 mg. per hundred cubic centimeters of blood.

Newburgh Test.—The test was made on 38 of the 42 patients. Of these 38, 25 passed and 13 did not, 66 per cent passing.

Roentgen Examination.—Plain films and intravenous urograms revealed that 11 patients had enlargement of the kidney shadow, 3 patients scoliosis, 6 patients enlargement of the kidney pelvis and 3 patients dilatation of the ureter.

NEPHRECTOMY FOR HYDRONEPHROSIS

There were 40 patients studied in the hydronephrosis group. The youngest was 3 years, the oldest 77 years of age. The average age was 35 years and 6 months.

TABLE 4.—*Results of Physical Examination*

Sex	Age	Positive Findings	Time Since Operation Yr.	Mo.	Comment
♀	42	Systolic murmur	2	2	
♀	44	Hypertension	24	4	
♀	40	Cardiac hypertrophy; hypertension	11	2	
♀	44	Draining sinus, perirenal abscess, tuberculous	24	11	Due to tuberculosis in remaining kidney
♀	43	Moderate mitral insufficiency	11	8	
♂	54	Cardiac hypertrophy; hypertension	4	9	
♂	53	Cardiac hypertrophy; coronary	6	..	
♀	53	Cardiac hypertrophy; hypertension; colitis	19	8	
♀	44	Thyroid enlargement, slight	11	7	
♀	49	Inguinal hernia	15	..	
♂	68	Benign prostatic hypertrophy	14	10	Transurethral resection
♂	75	Benign prostatic hypertrophy	20	3	Transurethral resection
♀	49	Carcinoma of breast	1	4	
♀	32	Osteoma of hard palate	1	8	
♀	31	Obesity (pituitary-ovarian deficiency)	3	7	
♀	49	Fibroid of uterus	3	4	

TABLE 5.—*Blood Pressure*

Sex	Age	Before Operation	After Operation	Time Since Operation
♀	44	110/ 70	176/ 94	24 years, 4 months
♀	40	105/ 80	165/115	11 years, 2 months
♀	64	110/ 72	155/ 90	4 years, 2 months
♀	53	150/100	180/110	19 years, 8 months
♂	53	150/ 96	115/ 70	6 years
♀	46	170/110	122/ 76	12 years, 3 months
♂	54	210/100	175/ 90	4 years, 9 months

The longest interval between the operation and the examination was nineteen years, the shortest eight months, the average seven years.

Urinary Symptoms.—Only 4 of the 40 patients stated that they had urinary symptoms. The following lesions

were responsible for the symptoms: prostatic obstruction 2 cases, spinal cord bladder 1 case and acute cystitis 1 case.

General Symptoms.—The general symptoms given in table 12 were noted.

TABLE 6.—*Positive Cultures*

	Cases
Hemolytic colon bacilli	1
Colon bacilli	7
Streptococcus viridans	1
Hemolytic streptococcus aureus	2
Eberthella	1
Diplococci	1
Staphylococcus albus	1

TABLE 7.—*Cases in Which Nonprotein Nitrogen Was Above 50 Mg.*

Sex	Age	Before Operation, Mg. per 100 Cc.	After Operation, Mg. per 100 Cc.	Diagnosis
♀	42	27	50	Tuberculosis of other kidney
♀	49	28	56	Tuberculosis of bladder
♂	44	35	70	Tuberculosis of other kidney

TABLE 8.—*Urinary Conditions Presented by Patients With Calculi*

Sex	Age	Positive Findings	Time Since Operation
♂	73	Benign prostatic obstruction	1 year, 8 months
♂	76	Benign prostatic obstruction	13 years, 5 months
♀	52	Recurrent pyelitis; stone in kidney	4 years, 6 months
♂	58	Pyelitis; stone in kidney	5 years, 2 months
♀	34	Pyelitis; stone in kidney	9 years, 8 months
♀	54	Recurrent pyelitis	5 years, 5 months
♂	35	Impacted stone in ureter	20 years
♀	51	Nocturia (1 ×)	12 years, 10 months
♀	28	Nocturia	4 years, 9 months

Pain in Remaining Kidney.—Only 2 patients complained of pain in the remaining kidney.

Physical Examination.—The data given in table 13 were obtained on physical examination.

Weight.—All patients have held their previous weight or gained weight, in several instances as much as 50 pounds.

Blood Pressure Studies.—Increase in blood pressure was noted in only 3 cases, as recorded in table 14. In 1 case (male) the blood pressure decreased from 160/115 before operation to 125/75 three years and eight months after operation.

Urinalysis.—In only 4 cases was the presence of albumin disclosed; a few pus cells were disclosed in 8, casts in none. In 17 cases the urine was sterile, in 2 no cultures were obtained, in 11 growth on culture was obtained as shown in table 15.

Blood Chemistry.—In only 4 cases was there an increase in the nonprotein nitrogen values in the blood. Values of 44, 41, 95 and 44 mg. per hundred cubic centimeters of blood were recorded. In 13 the nonprotein nitrogen before operation was not recorded.

Newburgh Test.—The test was performed on 31 of the 40 patients. Of the 31, 22 passed and 9 were unfavorable, a percentage of 70 disclosing normal function.

Roentgen Examination.—Examination disclosed the presence of scoliosis in 6 cases. Flat film disclosed an enlargement of the kidney outline in 4 cases (compensatory hypertrophy). The intravenous pyelograms disclosed a slight enlargement of the pelvis in 7 cases. In 3 the question was raised as to whether or not the enlargement was due to hypertrophy (functional following overwork of one kidney). In 1 case there was definite hydronephrosis, and in 1 there was clubbing of one calix. In several cases old films for purposes of comparison were not available.

NEPHRECTOMY FOR TUMOR

Eleven patients on whom nephrectomy was performed for malignant tumor reported for examination. The youngest patient was 14 years of age, who at the time of operation was 1 year and 2 months old. The oldest patient was 72 years of age. The average age was 50 years. The longest period that elapsed between operation and examination was twelve years and ten months, the shortest one year and one month and the average time was five years and eight months.

Symptoms.—Urinary symptoms were lacking; general symptoms too were lacking, except for 1 patient who had indefinite pains in the right upper quadrant (possible recurrence?).

Pain in Remaining Kidney.—None of the patients complained of pain in the remaining kidney.

Physical Examination.—Examination was negative in all cases.

Weight.—There was no loss of weight in this group of patients; either they have the same weight they had at the time of operation or they have gained. The largest weight gain was 40 pounds (18 Kg.).

TABLE 9.—*General Conditions Presented by Patients With Calculi*

Sex	Age	Positive Findings	Time Since Operation
♀	52	Cardiac enlargement; hypertension	4 years, 5 months
♂	71	Cardiac enlargement (present at time of operation)	1 year, 8 months
♀	68	Cardiac decompensation	1 year, 5 months
♂	62	Anginal attacks ?	6 years, 10 months
♂	76	Mild angina	13 years, 5 months
♂	40	Hypertension (present before operation)	1 year, 7 months
♀	41	Cholelithiasis	8 years, 8 months
♀	44	Cholelithiasis	3 years, 3 months
♀	51	Cholelithiasis	1 year, 1 month
♂	61	Peptic ulcer	6 years, 1 month

TABLE 10.—*Blood Pressure*

Age	Sex	Preoperative	Postoperative	Time Since Operation
52	♀	156/108	220/135	4 years, 5 months
55	♂♀	Not stated	220/120	20 years
64	♂♀	185/110	220/ 98	13 years, 9 months
59	♀	145/ 80	180/100	1 year, 1 month
55	♂♀	132/ 90	169/ 92	3 years, 1 month
73	♂♀	150/ 90	125/ 80	1 year, 8 months
51	♂♀	150/ 90	135/ 80	1 year, 1 month
61	♂	165/ 90	135/ 75	6 years, 1 month

TABLE 11.—*Positive Cultures in Urine*

	Patients
Colon bacilli	5
Hemolytic streptococci	2
Hemolytic diplococci	1
Hemolytic Staphylococcus albus	1
Staphylococcus aureus	1
Staphylococcus albus	1
Proteus bacilli	1
Eberthella	1
Salmonella	1
Diplococci	1

Blood Pressure.—There were no changes in the blood pressure except in 1 case, in which the blood pressure was 125/80 before operation and at present is 176/110, seven years after nephrectomy. The patient is now 62 years of age and has cardiac enlargement.

Urinalysis.—Examination of the urine revealed the presence of albumin in only 2 cases and the cultures in all were sterile.

Blood Chemistry.—In 5 cases there was an increase in the nonprotein nitrogen—namely, 44, 46, 51, 56, 59 mg. per hundred cubic centimeters of blood. In other words, there was a beginning impairment of kidney function in 5 of the 11 cases, or in 45.4 per cent.

TABLE 12.—*General Symptoms*

Sex	Age	Symptom	Elapse of Time Since Operation
♂	77	Angina	16 years
♂	72	Intermittent claudication	8 years
♀	62	Angina ?	3 years
♀	35	Dyspnea on climbing stairs	6 years
♀	47	Gallstones	8 years

TABLE 13.—*Results of Physical Examination*

Sex	Age	Positive Findings	Time Since Operation
♀	37	Occasional extrasystole	13 years, 10 months
♀	73	Rough aortic second sound	15 years, 6 months
♂	73	Systolic murmur	8 years, 10 months
♀	62	Cardiac enlargement, moderate	3 years, 2 months
♂	40	Enlarged thyroid	15 years, 8 months
♀	30	Systolic murmur	2 years, 8 months

Newburgh Test.—The test was performed on 10 patients and not on 1. Of the 10, 9 passed and 1 failed, a percentage of 90 passing.

Roentgen Examination.—In 1 case a slight hydronephrosis and a slight scoliosis exist. In 1 case two small stones which were present in the opposite kidney before operation have increased slightly in size since nephrectomy, six years and seven months ago.

NEPHRECTOMY FOR MISCELLANEOUS LESIONS

In table 16 is given a list of the various lesions for which nephrectomy was performed.

The youngest patient was 31 years of age, the oldest 73; the average age was 52 years. The longest period between operation and examination was twenty years, the shortest two years; the average time was nine years and six months.

TABLE 14.—*Increase in Blood Pressure*

Sex	Age	Preoperative	Postoperative	Time Since Operation
♀	60	142/ 90	170/ 95	11 years
♀	73	150/100	206/112	16 years, 6 months
♀	25	118/ 74	150/ 60	14 years

TABLE 15.—*Growth on Culture*

	Patients
Colon bacilli	4
Hemolytic streptococci	2
Hemolytic Staphylococcus albus	2
Hemolytic Staphylococcus aureus	1
B. alkaligenes	1
Eberthella	1

Symptoms.—Two women, aged 70 and 73, have had an occasional attack of frequency of urination. One patient has right upper quadrant pain due to cholelithiasis.

Pain in Remaining Kidney.—There were no instances of pain in the remaining kidney.

Physical Examination.—Examination was negative for all patients except 2: 1 patient had an increase in the blood pressure from 142/68 before operation to 195/85 five years after operation. The patient is 70 years old and has a systolic murmur, hypertrophy of the left ventricle and extrasystoles. One patient has an enlarged thyroid.

One patient had a decrease in blood pressure from 170/84 to 134/80 six years and nine months after operation.

Weight.—Four patients have had an increase in weight, 9 have shown no change and 1 patient showed a loss of 4 pounds (1.8 Kg.).

Urinalysis.—Examination of the urine revealed the presence of leukocytes in 3 cases. Cultures were sterile in all but 4 cases, in which organisms were obtained as shown in table 17.

Blood Chemistry.—The nonprotein nitrogen studies in all cases were normal before operation; the nonprotein nitrogen was increased in only 1 case.

Newburgh Test.—In this group of 14 patients the test was made on 12, all of whom passed, giving 100 per cent.

Roentgen Examination.—Studies revealed 1 case in which the kidney outline was enlarged and 1 in which there was a slight scoliosis. Intravenous pyelograms disclosed that in only 1 case was a slight enlargement of the pelvis evident (hypertrophy?).

TABLE 16.—*Lesions for Which Nephrectomy Was Performed*

	Patients
Ureterovaginal fistula	3
Solitary cyst with pronounced renal atrophy	2
Carbuncle	2
Echinococcosis	1
Renal hernia	1
Suppurative pyelonephritis	1
Atrophic pyelonephritis	1
Retroperitoneal perirenal lymph angioma	1
Pyonephrosis, supernumerary kidney	1
Acute pyogenic infection	1
Total	14

CARDIAC INVOLVEMENT

In answer to the question "What about cardiac function after nephrectomy?" this study discloses that cardiac enlargements, murmurs, attacks of angina and extrasystoles occurred as follows: in tuberculosis, 12.24 per cent; stone, 11.9 per cent; hydronephrosis, 17.5 per cent, and in the miscellaneous group, 7.1 per cent. An analysis of the group discloses that 3 of the 7 patients with tuberculosis were over 50 years of age. Of the 5 patients with stone who had cardiac changes 1 was 52 and the other 4 patients ranged from 62 to 76 years. In the hydronephrotic group 5 of the 7 patients were over 60. In the miscellaneous group the 1 cardiac patient was over 70.

HYPERTENSION

What about the blood pressure after nephrectomy? What can we tell our patient will happen to his pressure after nephrectomy?

In the tuberculous group there was an increase in blood pressure in 4 cases and a decrease in 3. In other words, the patient has a 12.25 per cent chance of an increase in his blood pressure. In 1 case there was a reduction in the pressure from 280/100 to 175/70, which is still up.

In the stone group there was an increase in 5 cases, or 11.9 per cent, and a decrease in 3, or 7.1 per cent.

In the hydronephrosis group there was an increase in 3 cases, or 7.5 per cent.

In the tumor group there was only 1 case that showed an increase, or 9 per cent.

In the miscellaneous group there was an increase in only 1 case, or 7.1 per cent.

NEWBURGH TEST

Of the 156 patients who returned for examination the Newburgh test was done on 126, of which number 92, or 73 per cent, passed. The patients are thus divided sharply into two groups: the smaller groups, composed of 12 miscellaneous and 10 tumors, in which all but 1 passed, whereas in the larger groups of hydronephrosis, tuberculosis and stones there was a very definite and constant percentage running between 66 and 70, and critical analysis of all the data available discloses no reason for this sharp and apparent definite difference. When these groups are correlated with elevation of blood pressure, retention of nonprotein nitrogen or other factors there are no constant deviations which would indicate any of them as a source of the difference. It is true that scattered throughout these groups there are occasional hypertensives and some increased nonprotein nitrogen, but these cases are so evenly distributed that they are definitely not statistically significant. It is possible that further search will reveal some factor which is more constant in determining this distinct difference while, on the other hand, it may be a matter of chance.

The conclusions reached in this study are that 73 per cent of those patients with only one kidney are able to pass a test as rigid as that of the Newburgh concentration test, which is by far more drastic than many of the other tests popularly used, and that in certain series practically 100 per cent are able to pass the requirements of this test with one kidney only.

TABLE 17.—*Growth on Culture*

	Patients
Hemolytic Streptococcus viridans	1
Hemolytic streptococcus	1
Colon bacilli	1
Staphylococcus aureus	1

SCOLIOSIS

During this study I was impressed by the frequency with which Dr. Squire, head of the x-ray department of Presbyterian Hospital, reported the presence of scoliosis. This led to a review of the preoperative films. The films were also reviewed by Dr. Kellogg Speed.

Scoliosis was present in 18 of the 156 patients and was present on the side opposite the nephrectomy. A comparison of the present films disclosed that scoliosis was absent in 3 cases before operation and developed since operation.

Comparison of the films is summarized in table 18.

The occurrence of scoliosis in the various lesions for which nephrectomy was performed is given in table 19.

SUMMARY

From a review of the data obtained in this study the following statements are justified:

1. The average length of time that elapsed between the nephrectomy and examinations was eight years and two months. The longest period since the nephrectomy in this series was twenty-four years and eleven months.

2. The oldest patient at the time of nephrectomy was 72, one year and eight months having elapsed since the operation. The oldest patient studied in this series is 77, a period of sixteen years having elapsed since the operation. The youngest patient at the time of nephrectomy was 10 months of age, a period of four years and six months having elapsed since the operation.

3. Pain in the remaining kidney does not occur with any great regularity, although the impression seems to prevail that this phenomenon is common following nephrectomy. It occurred in only 7 cases in this series.

TABLE 18.—*Comparison of Films*

	Patients
Complete correction since nephrectomy	1
Almost complete correction since nephrectomy	1
Less scoliosis since nephrectomy	1
No change in scoliosis	7
Increase in scoliosis	2
Not present before operation	3
No preoperative films available	2

In some of the cases in which it occurred, a pathologic condition in the remaining kidney, disclosed by study, was responsible for its presence. In short, if the patient complains of pain in the remaining kidney one should not automatically assume that the pain is due to compensatory hypertrophy when in reality it may be due to organic disease.

4. There were 18 patients (11.5 per cent) who had cardiac involvement, 4 of whom were under 50 years of age. One patient had the cardiac hypertrophy before operation. The incidence of cardiac enlargement in a group of patients over 50 with nephrectomy is therefore about what one can expect in a similar age group with no nephrectomy.

5. In the largest number of cases the weight remained the same or there was an increase. In only 5 was there a loss. A gain of as much as 50 pounds was noted in 7 cases.

6. In 14 cases there was an increase in the blood pressure. Eliminating patients in whom hypertension was present before operation, the study discloses that the patients are well along in years, having reached a time in life when hypertension might be expected. There were only 2 patients with hypertension who were under 50 years of age. In 6 cases there was a reduction in the blood pressure but the amount of the reduction was not pronounced or very precipitate.

TABLE 19.—*Scoliosis Among Nephrectomized Patients*

	Patients
Stone and scoliosis	8
Hydronephrosis and scoliosis	5
Tuberculosis	3
Tumor	1
True supernumerary kidney	1
Total	18

7. The results of the urinalysis depend on the lesion for which the nephrectomy was performed. In the 49 cases of renal tuberculosis pus was present in 14 and albumin in 6. In the 42 cases of stone, pus was present in 11 and albumin in 6, whereas in the remaining groups of 65 cases pus was present in 11 and albumin in 6. The cultures were more frequently positive in the group in which nephrectomy had been performed for stone. All cultures in the tumor group were sterile; four were positive in the miscellaneous group; eleven were positive in the group for hydronephrosis; fourteen were positive in the group for tuberculosis.

8. Nonprotein nitrogen studies were made in 146 of the 156 cases. The nonprotein nitrogen value was increased in 36, or 24.65 per cent. Of these 36 cases the nonprotein nitrogen value was normal before nephrectomy in 22, no preoperative studies were made in 8, and the nonprotein nitrogen was elevated before operation in 6 and remained so. So that, excluding the cases in which preoperative determinations were not made, elevation of nonprotein nitrogen occurred in 15 per cent.

9. Seventy-three per cent of those patients with only one kidney are able to pass the Newburgh concentration test.

10. Scoliosis was present in 18 of the 156 patients.

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ABSTRACT OF DISCUSSION

Dr. Monroe E. Greenberger, New York: Dr. Kretschmer has confirmed statistically the impressions that many of us have gained through clinical observation. Recently Addis has cast a doubt on the opinion held for many years that only a portion of the glomeruli are open at any one time. The newer physiologic observations signify that all functioning renal nephrons carry their loads simultaneously and that when some are removed the others must increase their load. Two additional complications presented by these tuberculous patients are amyloidosis and postnephrectomy sinuses. In routine follow-ups, using the simple congo red test as modified at Sea View Hospital, we find a high incidence of amyloidosis. For diagnosis, we require 90-100 per cent absorption of the dye. This is found relatively often after nephrectomy for tuberculosis, occasionally pyonephrosis, rarely cancer. There is usually an associated amyloid nephrosis. It is a frequent cause of albuminuria in these patients. The commonest postnephrectomy occurrence of amyloidosis is in cases with persistent tuberculous sinuses. Because of the amyloid nephrosis involving the single remaining kidney and the resulting uremia, we believe in active, rapid, treatment of tuberculous sinuses. An occasionall patient may get along well. If these sinuses are not cleared up rapidly, amyloidosis will develop with resulting uremia. We try various methods of irrigation, and if the sinus is not closed within six to eight weeks we advocate radical surgical removal of the sinus.

Dr. Stanley R. Woodruff, Jersey City, N. J.: Dr. Kretschmer's study does not entirely answer the three questions cited at the beginning of the paper. Accompanying his study of the living patients should also go a historical review of those who have died, and for what reason. With these data at hand one would be better fortified to answer more intelligently the question whether a patient can live with one kidney. The answer is yes, and he can also die from uremia shortly after nephrectomy. Naturally those conditions in which there has been a gradual upbuild of compensatory function, as hydronephrosis, tumor and calculous pyonephrosis, will show the best postoperative results. One would expect to find in the 49 patients operated on for tuberculosis of the kidney that urinary symptoms and actual evidence of the disease was noted in the bladder or the remaining kidney. Patients should be taught that nephrectomy is more often a conservative operation than a radical one and that only in certain instances will it be necessary to inhibit activities in postoperative living. Dr. Kretschmer's study certainly supports this statement. Tuberculosis heads the various conditions requiring nephrectomy in the need of postoperative care, and we can only hope for the time to come when patients with this condition will be given proper subsequent treatment. Patients who have been nephrectomized for calculous disease should be studied for a possible cause; nearly all other patients show conditions in which postoperative care means little.

Dr. Herman L. Kretschmer, Chicago: In this series there were 47 patients who were operated on for renal tuberculosis. Seven of these patients are still having symptoms due to tuberculosis of the bladder and the removed kidney. In some of them the symptoms are due to contracted bladders, the result of the renal tuberculosis. I wish to agree with Dr. Woodruff as regards the importance of postoperative care in the management of the patient on whom one has performed a nephrectomy.

THE REPAIR OF CRANIAL DEFECTS WITH TANTALUM

AN EXPERIMENTAL STUDY

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MEDICAL CORPS, U. S. NAVAL RESERVE

The surgeon planning repair of a cranial defect has a large number of methods from which to choose. At the present time the most favored technics are those which employ autogenous tissues, particularly bone and cartilage. However, the use of substances alien to the host has continued despite the popular aversion to the production of a foreign body reaction. Furthermore, enthusiasm for the alloplastic materials has recently been revived by the encouraging reports of Geib,[1] Beck[2] and Peyton and Hall[3] on the repair of cranial defects with vitallium. In this paper certain observations on the experimental and clinical use of tantalum for this purpose are reported.

Before I discuss the alloplastic methods it is well to consider the advantages and disadvantages attending the use of autografts. Bone is obtained either from the adjacent skull, with the Müller-König technic or one of its modifications, or from the ribs, tibia, ilium or scapula. The principal advantage of these technics is that the living tissue of the host is used, thus obviating reaction to a foreign body. The objections to the use of autogenous bone are that either a more extensive procedure or a second operation is required and that absorption of the grafts may occur. Ney[4] has reported 44 cases of cranioplasty with autogenous bone from World War I in 34 of which there was either partial or complete absorption of the grafts. These observations, however, are at variance with those of other authors. Grant and Norcross,[5] who have reviewed the literature on cranioplasty, observed 58 cases for periods of time varying from nine months to nineteen years after operation. Satisfactory results were obtained in 48 of these patients and absorption of the grafts was noted in only 3 instances.

Peer[6] has recently stated that fresh autogenous rib cartilage is the most satisfactory cranioplastic material. He points out that it lives as cartilage as long as the patient survives. However, Grant and Norcross object to its use for this very reason. The defects, by remaining cartilaginous, are never solid. A second disadvantage, also applicable to the use of bone, is that satisfactory repair from the cosmetic standpoint is not always obtained, owing to the shape of these grafts.

In the discussion of the alloplastic methods the use of celluloid will first be considered. Ney has described 300 cases of cranioplasty in which this substance has been used. He reports only five failures in his unusually large series of cases. Furthermore, in 4 of these 5 cases the celluloid plates were successfully reinserted

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1. Geib, F. W.: Vitallium Skull Plates, J. A. M. A. **117**: 8-12 (July 5) 1941.
2. Beck, C. S.: Repair of Defects in Skull by Ready Made Vitallium Plates, J. A. M. A. **118**: 798-799 (March 7) 1942.
3. Peyton, W. T., and Hall, H. B.: The Repair of a Cranial Defect with a Vitallium Plate, Surgery **10**: 711-715 (Nov.) 1941.
4. Ney, K. W.: The Repair of Cranial Defects with Celluloid, Am. J. Surg. **44**: 394-399 (May) 1939.
5. Grant, F. C., and Norcross, N. C.: Repair of Cranial Defects by Cranioplasty, Ann. Surg. **110**: 488-512 (Oct.) 1939.
6. Peer, L. A.: Types of Buried Grafts Used to Repair Deep Depressions in the Skull, J. A. M. A. **115**: 357-360 (Aug. 3) 1940.

at a later date. The disadvantages of celluloid have been discussed by Grant and Norcross, who point out that it is a foreign body, is nonrigid and may become soft and ineffective. In 1 case in which they reoperated because of severe headache the celluloid plate was invested in a capsule several millimeters in thickness. This intense and progressive type of connective tissue response to celluloid has been demonstrated in experimental animals by Penfield.[7]

In 1941 Geib and later Beck and Peyton and Hall described the successful use of vitallium plates for the closure of cranial defects. The plates were well tolerated in all of Geib's 4 cases. His longest period of observation at the time of writing was two years. One of his patients died of an unrelated cause and at autopsy there was no evidence of an unfavorable reaction to the metal. Peyton and Hall describe a good clinical result in their case at the end of six months of observation. Beck reports the successful use of vitallium in 4 cases. He has overcome one disadvantage attending the use of this metal, namely the necessity of having the plates cast to fit the defect, by employing broad vitallium strips cast in several sizes. These can be bent to the desired contour at the time of operation.

In addition to vitallium and tantalum there are other metals which have been demonstrated to be comparatively inert in tissue. The various types of stainless steel have found a wide application in orthopedic surgery. More recently Campbell and his colleagues [8] have shown that ticonium is not cytotoxic either in vitro or in vivo. This metal is an alloy composed of nickel, cobalt, chromium and molybdenum, with a small amount of beryllium added if it has to be cast. However, to my knowledge, the use of these metals for the repair of cranial defects has not been reported.

Tantalum is an element, the seventy-third in the periodic table. It is a bluish white metal resembling steel in its physical properties and glass in its chemical characteristics. The ductility of tantalum enables it to be drawn into wire or rolled into sheet while in the cold state. It is this property which is of value at the operating table. Owing to its malleability flat tantalum sheet can be cut to fit the defect with tin shears or heavy surgical scissors and then hammered or bent to the desired contour. With regard to its chemical properties, tantalum is resistant to all of the inorganic acids except hydrofluoric and fuming sulfuric acids. Furthermore, it is resistant to weak alkalis, strong alkalis in weak concentrations and the salts, except those which hydrolyze to form strong alkalis.

Before I discuss the published experimental and clinical data on tantalum it is fitting at this point to mention the fundamental investigations of Bothe and his colleagues [9] on the surgical metals. These workers have studied the reaction of bone to metallic implants. They conclude that the unfavorable reaction of the bone is due not to electrolysis but to the physical and chemical properties of the metal itself. Similarly, the unfavorable reactions to alloys are due to the presence of toxic metals, e. g. nickel, copper and manganese, in them. In their conclusions they point out that vitallium comes nearer to meeting the requirements of a surgical alloy than does stainless steel. Finally they mention that tantalum may be the material of choice when sufficient data on this metal are available.

Burch and Carney [10] were the first workers to use tantalum in surgery. They successfully employed bone plates and screws and wire in both animal and human tissue. This work has been confirmed by Burke,[11] who was the first observer to publish results attending the surgical use of this metal. He was particularly impressed by the lack of reaction when tantalum wire was used as a cutaneous suture.

In collaboration with Odom I [12] have published the results of experiments in which tantalum foil of $\frac{1}{1,000}$ inch thickness was used to protect cerebral wounds from the ingrowth of connective tissue and blood vessels from the overlying structures. In this study the metallic foil provoked a minimal encapsulation in connective tissue and was far superior to the other materials used. In another series of experiments [13] the reaction to Cushing's hemostatic clips fabricated from tantalum ribbon was compared to that attending the use of clips cut from the standard silver ribbon. In this study only a slight marginal neuroglial reaction and/or minimal encapsulation by connective tissue occurred around the tantalum ribbon. In contrast, the silver clips provoked an intense inflammatory reaction which eventually led to encapsulation in dense connective tissue. As a result of these findings tantalum clips have replaced silver clips in all neurosurgical procedures carried out at the Montreal Neurological Institute.

METHODS AND MATERIALS

Tantalum plates were implanted in the cranial defects of 11 cats. The operative procedures were carried out under sterile conditions using intraperitoneal soluble pentobarbital anesthesia. The scalp and underlying fascia were incised in the sagittal plane and retracted laterally. An incision was then made into the temporal fascia along its line of attachment to the calvarium. This fascia and the temporal muscle were reflected from the skull with a periosteal elevator. By this means a satisfactory exposure of the calvarium was obtained. The several types of cranial defects were made with a trephine and mastoid rongeurs. Tantalum plates $\frac{1}{50}$ inch in thickness were used in all the experiments with one exception.

Three separate technics were used in the emplacement of the tantalum plates. In 6 cats bilateral trephine holes, approximately 1.5 cm. in diameter, were made. In these animals only one of the cranial defects was repaired with the metal. The tantalum disks were cut to fit and were supported in position by small spicules of bone projecting into the defect from the inner table of the skull. No other method of fixation of the plates was used. In a second group of 4 animals midline rectangular defects, approximately 2.5 by 1.5 cm., were made. In this group the tantalum plates were secured to the skull with two 35 gage tantalum wires, one on each side. In 1 animal a large, round midline defect was made and covered with a disk of tantalum $\frac{1}{100}$ inch in thickness, which was bent to conform with the convexity of the surrounding skull. This was the only experiment in which the tantalum plate was used to cover, rather than fill, the cranial defect.

7. Penfield, W. G.: Principles of the Pathology of Neurosurgery, New York, Nelson's Loose-Leaf Surgery, 1927.

8. Campbell, Eldridge; Meirowsky, Arnold, and Hyde, Gertrude: Studies on the Use of Metals in Surgery: I. Comparative Determinations of the Cytotoxicity of Certain Metals in Fibroblast Culture, Ann. Surg. **114**: 472-479 (Sept.) 1941.

9. Bothe, R. T., and Davenport, H. A.: Reaction of Bone to Metals: II. Lack of Correlation with Electrical Potentials, Surg., Gynec. & Obst. **74**: 231-234 (Feb.) 1942.

10. Burch, J. C., and Carney, H. M.: Personal communication to the author.

11. Burke, G. L.: The Corrosion of Metals in Tissues and an Introduction to Tantalum, Canad. M. A. J. **43**: 125-128 (Aug.) 1940.

12. Pudenz, R. H., and Odom, G. L.: Meningocerebral Adhesions: An Experimental Study of the Effect of Human Amniotic Membrane, Amnioplastin, Beef Allantoic Membrane, Cargile Membrane, Tantalum Foil and Polyvinyl Alcohol Films, Surgery **12**: 318-344 (Aug.) 1942.

13. Pudenz, R. H.: The Use of Tantalum Clips for Hemostasis in Neurosurgery, Surgery **12**: 791-797 (Nov.) 1942.

At the time of closure all bleeding was carefully controlled with the electrocautery. The temporal muscles were approximated to the skull with bridging sutures of silk extending across the midline. Interrupted black silk sutures were used to close the other layers, and a sterile dry dressing was applied.

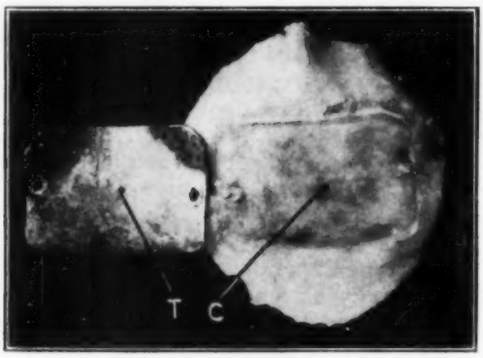

Fig. 1 (cat 1).—Appearance of outer aspect of calvarium. Specimen taken after period of survival of one hundred and ninety-seven days. The tantalum plate (*T*) has been reflected from the defect on the wire hinge. Note the inner layer of the connective tsisue capsule (*C*).

The animals were killed after periods of survival varying from twenty-seven to three hundred and eighteen days. There was no evidence of reaction to the metal during the observation period in any of the animals. In addition to occasional palpation of the site of implantation of the metal, roentgenograms of the skull were made, either during the interval phase or just prior to death, to determine whether any marginal necrosis of bone had occurred.

At the end of the survival period the animals were again deeply anesthetized with intraperitoneal soluble pentobarbital. The neck was incised and both internal carotid arteries and internal jugular veins were exposed. A cannula was inserted into one of the arteries and the head perfused with isotonic solution of three chlorides followed by 10 per cent solution of formaldehyde.

When the tissues were firmly fixed, the site of implantation of the tantalum plates was carefully

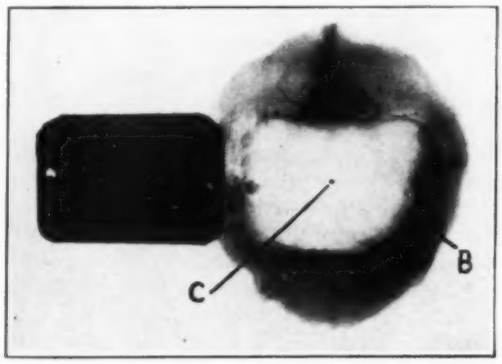

Fig. 2 (cat 1).—Appearance of specimen under transillumination, demonstrating the thinness of the connective tissue lamina (*C*) and the marginal proliferation of bone (*B*).

exposed. Due care was taken to leave tissue relationships undisturbed. This was accomplished by removing the scalp and galea with sharp dissection, incising the temporal muscles and pericranium at an appreciable distance from the plate and cutting the bone and dura at the periphery. By this means the calvarium, with the overlying muscles and pericranium and the underlying dura attached, was removed *en masse*. The specimens were preserved in 10 per cent solution of formaldehyde to await further study.

RESULTS

In all the experiments the tantalum plates were enveloped in delicate translucent layers of connective tissue which were continuous with the pericranium. The capsule was completely formed at the end of twenty-seven days and, interestingly enough, showed no tendency to progressive thickening. Even at the end of three hundred and eighteen days, the longest period of survival, the bluish white luster of the metal was easily perceptible through the delicate layers of the capsule. These layers were tightly adherent to the tantalum plates and intracapsular fluid formation was absent. The inner layer was adherent to the dura but easily separable from it. Finally, when the capsules were opened the lining was invariably found to be smooth and glistening. Certain of these characteristics are illustrated in figures 1 and 2.

The changes in the bone bordering the tantalum plates were of particular interest. Osteoblastic activity was not hindered, and even at the end of twenty-seven days the proliferating bone at the edge of the defect had closely approximated the edge of the metal. In the animals surviving three hundred and seventeen and three hundred and eighteen days there was a complete closure of the cranial defect by the new bone formation. This osteoblastic proliferation was confirmed by microscopic study. The osseous layer was so closely adherent to the tantalum plates that when the latter were removed an accurate bony impression of them remained (figs. 3, 4 and 5). Proliferation of bone over the external surfaces of the plates was absent in all instances.

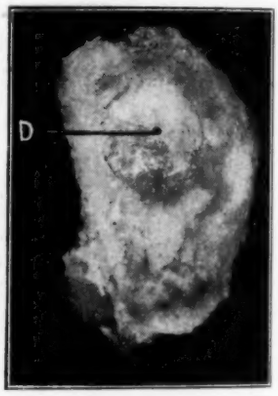

Fig. 3 (cat 2).—View of outer table of calvarium showing the site of the cranial defect (*D*). Specimen taken after period of survival of three hundred and eighteen days. In this animal the cranial defect has been completely obliterated by the regrowth of thin lamina of bone beneath the tantalum plate. An osseous impression of the tantalum plate remains.

Without exception, the tantalum plates retained their original luster and showed no signs of corrosion. Finally, an inflammatory reaction leading to extrusion or necessitating removal of the plates did not occur.

COMMENT

These observations on the experimental use of tantalum plates for the repair of skull defects have again confirmed the inertness of this metal in animal tissue. Furthermore, the studies demonstrate that tantalum is a satisfactory material for this purpose. There are several points of evidence in favor of these statements. 1. Although encapsulation of the metal in connective tissue occurred, it was not progressive in character. This would obviate the possibility of local pressure on the brain by a steadily thickening capsule. Even after three hundred and eighteen days the connective tissue envelop was thin, translucent and tightly adherent to the metal. 2. The presence of the metal did not interfere with the normal regeneration of bone. After approximately eleven months the cranial defects were closed by a thin osseous layer formed beneath the metal. 3. There was no corrosion of any of the tantalum plates.

In their report on the use of vitallium for the repair of cranial defects, Peyton and Hall state that an ideal cranioplastic material should be (1) nonirritating both

electrically and chemically, (2) strong and inelastic, (3) light in weight, (4) nonabsorbable and (5) malleable. Tantalum fulfils all these requirements except that of lightness in weight. It has an atomic weight of 180.9, about three times that of iron. However, the ability to use a thin sheet of the metal compensates for this disadvantage. Furthermore, despite its heaviness, none of the patients who have had a cranial defect repaired with tantalum have, to my knowledge, been aware of any sensation of heaviness or pressure.

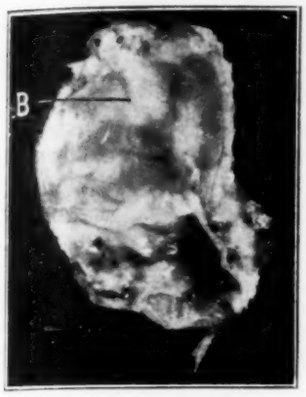

Fig. 4 (cat 2).—Appearance of inner table, confirming the closure of the defect with new bone (*B*).

Although no clinical reports on the use of tantalum for cranioplasty have appeared in the literature, the metal has been so used by several workers. Fulcher,[14] who was the first to use the metal for cranioplasty in clinical subjects, has employed tantalum sheet 1/40 inch in thickness to repair rather large defects of 2 patients. Excellent results were obtained in both instances. Penfield,[15] Cone [16] and Spurling [17] have had similar encouraging results. They have obtained the desired contour of the metal plates by hammering them either over convex surfaces or in concave molds. I would suggest the use of a rawhide mallet and a hollow wooden mold. The latter should be designed so that any desired degree of convexity is attainable. Holes can be drilled through the plates to permit wiring to the skull and the escape of any blood or cerebrospinal fluid which may collect beneath them.

SUMMARY AND CONCLUSIONS

These experimental studies indicate that tantalum is a satisfactory alloplastic material for the repair of cranial defects. It has the desirable qualities of noncorrosiveness, inertness in tissue, nonabsorbability, absence of toxic ingredients and malleability. This last quality enables the surgeon to form the flat tantalum sheet to the desired contour at the operating table. In view of these characteristics, the use of this metal should be considered in the repair of many of the cranial defects which will inevitably occur as a result of craniocerebral injury in the present war, and particularly in those repairs in which a satisfactory cosmetic result is of utmost importance.

Fig. 5 (cat 1).—Appearance of inner table under transillumination. Note the density of the osseous tissue (*B*) at the center of the defect and the newly formed channels of the dural vessels (*V*).

14. Fulcher, O. H.: Personal communication to the author.
15. Penfield, W. G.: Personal communication to the author.
16. Cone, W. V.: Personal communication to the author.
17. Spurling, R. G.: Personal communication to the author.

THE TREATMENT OF ACUTE CHOLECYSTITIS

AN EVALUATION

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The great variability of the clinical course and pathologic picture of acute cholecystitis requires the individualized treatment of this condition. This has not been common practice. Instead, rigid, and to a certain extent contradictory, plans of treatment have been recommended. These range from operating early, as in appendicitis, to delaying surgery until the acute manifestations of the disease have entirely subsided. Both methods have much to commend them and no doubt have favorably influenced the treatment of this condition. This controversy, however, has not been without danger, since attempts to assimilate and apply the two methods have been confusing to the practitioner. In recent years at the Peter Bent Brigham Hospital each patient with acute cholecystitis has been treated as an individual surgical problem.[1] The results have been so satisfactory and the mortality rate so much improved that a restatement of our views and a clarification of the issues involved seems desirable.

The program which we have utilized is as follows: Regardless of how slight the signs and symptoms may be, as soon as the diagnosis of acute cholecystitis has been established, immediate hospitalization is urged. Acute cholecystitis is such a potentially serious disease that the idea of treating the patient at home has been abandoned entirely, and our results have justified this change. Early hospitalization does not necessarily indicate that early surgery will be carried out but affords an excellent opportunity to institute treatment which will prepare the patient for surgery at an ideal time.

The extent and severity of the inflammatory process in the gallbladder are estimated by physical examination plus an evaluation of the patient's general condition. The accepted conservative measures are then instituted: (1) relief of pain by morphine, (2) semisitting position with heat to the abdomen, (3) administration of fluids by the intravenous or subcutaneous routes to hydrate the patient properly and (4) constant gastric suction if the patient is vomiting or distended. Routine laboratory studies, including urine and blood examinations, are made.

Although many patients with acute cholecystitis respond promptly to treatment, the possible concomitant complications must not be disregarded and even in mild cases the signs, symptoms and laboratory data should be evaluated at frequent intervals. In severe cases this should be continued throughout the night. Obviously, this would not be practicable if the patient should be treated at home.

CLINICAL TYPES

We attempt to classify each patient clinically, i. e. in accordance with the duration and severity of the attack and the response to general treatment. This aids the

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1. Zollinger, Robert: Acute Cholecystitis, New England J. Med. **224**: 533 (March 27) 1941.

clinician to decide the subsequent course of treatment for each patient and to determine safely the optimum time for early or late surgery. There are at least three major clinical groups. The first group comprises the majority of patients, whose signs and symptoms subside after adequate treatment with rest, fluids and relief

TABLE 1.—*Indications for Early or Delayed Surgery*

Early
1. "Good risk" patient seen shortly after onset (24 to 48 hours)
2. Exacerbation of symptoms while under treatment
3. Progression of signs or symptoms while under treatment
4. Signs of generalized peritonitis
Delayed
1. Patient seen late with decreasing signs and symptoms
2. Elderly or "poor risk" patients with decreasing signs and symptoms

of pain. These patients are sometimes well prepared for surgery within five or six days. However, many clinical variations of this group are encountered. For example, some patients present minimal signs and symptoms of acute cholecystitis—perhaps because the attacks have been mild or because the physician was not called until the acute episode had quieted down. We are convinced that it is safer to send these patients to the hospital, even if it is a first attack. They usually respond promptly to general conservative measures and can be operated on without undue risk within eighteen hours of admission. Other patients, with more pronounced symptoms, respond promptly to conservative treatment within forty-eight hours with the return to normal of their temperature, white cell count and physical findings. If operation is not carried out when the proper state of hydration is obtained, a few of these patients will have an exacerbation of symptoms after forty-eight hours. It is impossible to predict the course of their disease when treated conservatively; hence, early hospitalization and surgery are urged. Many other patients show slow but progressive improvement, with subsidence of acute manifestations after three days. Although we feel that it is best to operate early in these cases, we have not hesitated to delay operation when the progress is satisfactory.

The second group includes those patients whose temperature, white cell count and physical findings remain

TABLE 2.—*Surgical Treatment*

		Number of Deaths	Mortality Per Cent
Total operations	156	4	2.6
Cholecystectomy	70	0	0
Cholecystectomy and choledochostomy	57	1	1.8
Cholecystostomy	28	3	10.7
Cholecystostomy and choledochostomy	1	0	0
Common duct stones removed		23	
Incidence of common duct stone		14.9%	

practically constant, with no response to initial treatment. Operation should not be delayed in this group and should be performed within thirty-six to forty-eight hours, after the fluid balance has been adjusted.

The third clinical group is made up of the small number of patients whose signs and symptoms show rapid progress. These patients are acutely ill and usually require simple drainage of the gallbladder as soon as possible.

TIME FOR OPERATION

As stated before, we attempt to individualize the treatment of each patient. It is very difficult to make fixed rules to govern the proper time for surgery in acute cholecystitis. However, an emergency operation is rarely necessary. Sufficient time should elapse to allow for proper hydration of the patient (table 1). By early operation we mean that which is performed within twelve to forty-eight hours after admission of the patient to the hospital. This is done under the following circumstances: 1. When the patient is a good risk and is seen soon after the onset of the attack, within twenty-four to forty-eight hours. 2. When the patient, progressing satisfactorily under conservative treatment, develops an exacerbation of symptoms. If the patient's physical findings, temperature and white blood count increase, or sufficient distress returns to necessitate administration of morphine, operation should not be delayed. 3. When the signs and symptoms fail to respond to, or increase under, treatment. It is not unusual to find that these patients have an extracholecystic abscess. They are usually quite ill and sometimes it is best to do no more than a cholecystostomy. 4. In a small group of patients who are acutely ill with signs of generalized peritonitis, in all likelihood associated with acute cholecystitis. In some instances there may be a question of differential diagnosis between

TABLE 3.—*Indications for Cholecystostomy*

1. Elderly patients, or those accounted poor surgical risks, who present a well defined mass
2. Seriously ill patients for whom minimal surgery is desirable
3. Presence of an abscess about the gallbladder
4. When technical difficulties prevent cholecystectomy

acute cholecystitis, acute appendicitis or perforated ulcer. These patients are first given fluids and then are operated on within a matter of a few hours after their admission to the hospital.

Operation is delayed and conservative measures are continued if the patient is seen forty-eight hours or more after the onset of the acute attack and the signs and symptoms have subsided under conservative treatment. It is our feeling that postponement of the operation for a few days is all that is necessary. We tend to delay operation on elderly patients if they progress satisfactorily under conservative treatment. Likewise, operation is delayed if a patient is a poor risk, because of a pathologic condition other than that related to the acute cholecystitis. It should be remembered, however, that in many of the groups that have been mentioned an exacerbation of symptoms may occur requiring early surgery. Furthermore, one must remember that occasionally the signs, symptoms and laboratory data are misleading and do not give reliable information as to the actual severity of the pathologic progress involving the gallbladder. This is especially true among elderly persons.

CLINICAL ASPECTS

During the past five years we have operated on 146 patients with acute cholecystitis in the Peter Bent Brigham Hospital according to the plan of individualized treatment just outlined. Despite the fact that immediate hospitalization has been urged for these patients, we have noted little evidence of a trend in this direction. As a matter of fact only 45, or 30 per

cent, of our patients entered the hospital within forty-eight hours of the onset of the acute attack. This, no doubt, varies in different clinics. Allen and Wallace [2] found that approximately 85 per cent of their patients were admitted during the early period. Chart 1 shows the duration of symptoms from the onset of the acute attack until operation. This period is more important than the interval between admission to the hospital and operation. Only 7 patients were operated on within twelve to twenty-four hours after admission and a total of 15 patients were operated on during the first forty-eight hours. Relatively few of our patients, therefore, were operated on early after the onset of the attack. This was partly due to the fact that it seemed desirable to complete their preoperative preparation or perhaps because the symptoms had existed for a longer period of time when admitted. Considerable weight in favor of early operation may be drawn from the fact that there were no deaths among 57 patients operated on within eight days of the onset of an acute attack of cholecystitis.

Acute cholecystitis is primarily a disease of middle life. Our patients varied in age from 19 to 77 years

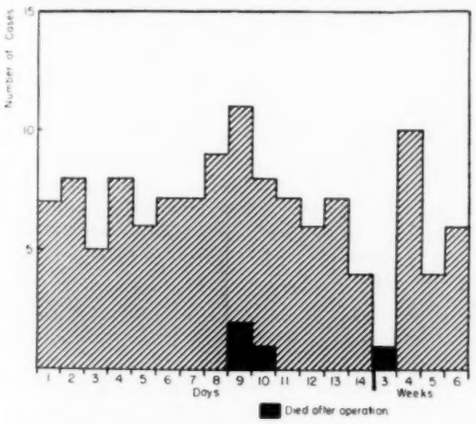

Chart 1.—Duration of symptoms: Note that only 15 patients were operated on within forty-eight hours of the onset of the acute symptoms. Furthermore, there were no deaths within eight days of the onset of symptoms.

(chart 2). Forty-five of them were less than 45 years old, in which group there were no deaths. As one would expect, it was primarily the older patients who died, all 4 being patients between 45 and 65 years of age. Yet we have never considered that advanced age in itself is a contraindication to surgery.[2] There may be a tendency to postpone or advise against operating on older patients having their first attack of cholecystitis. However, one cannot but be impressed, after reviewing many case histories, that many of those could have been treated surgically with far greater safety.[3] That the elderly patient can withstand cholecystectomy is illustrated by the fact that 31 of our patients were above 65 years of age and 16 of these above the age of 70. There were no deaths in this group.

The mortality among 146 patients with acute cholecystitis, having 156 operations on the gallbladder during the five year period from 1937 to 1941, was 2.6 per cent (table 2). Cholecystectomy was performed on 70 patients without mortality. This indicates the safety of removing the acutely inflamed gallbladder completely in properly selected cases. In recent years we have practiced almost as a rule emptying the acutely distended gallbladder through a trocar. If the field is properly walled off, the danger of spreading infection is far less than the hazard of poor exposure. It must be remembered that only in about one half of the cases is it possible to obtain a positive culture; the inflammatory reaction in the remainder is due to chemical and mechanical causes.

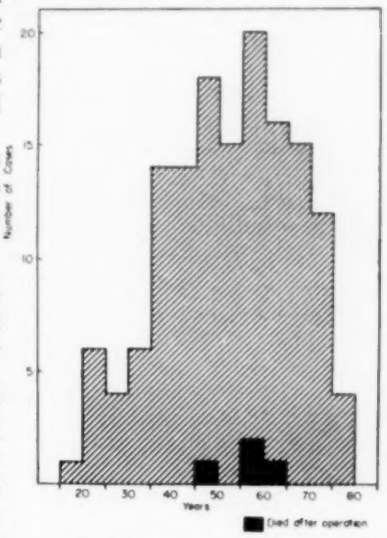

Chart 2.—Age distribution: Three of the 4 deaths occurred between the ages of 55 and 65 years. However, there were no deaths among 31 patients operated on above the age of 65. Old age is not necessarily a contraindication to operation.

On 57 patients choledochostomy was performed in addition to cholecystectomy with but one death. Twenty-three of these patients were found to have one or more common duct stones, making an incidence of 14.9 per cent of all cases. Formerly it was thought that since the cystic duct was frequently blocked by a calculus in acute cholecystitis it was unlikely that any stones escaped into the common duct. Our experience over a period of years has indicated the opposite, as we have consistently found a 12 to 15 per cent incidence of common duct stones in these cases. It has been our feeling that exploration of the common duct has added little or nothing to the total mortality, provided the patients have been properly prepared for operation. If we suspect from the patient's history that a common duct stone may be present, we tend to delay operation as long as progress is satisfactory in order that the inflammatory reaction about the common duct may subside. The technical procedures in this region can then be more easily and safely performed. Operation is also delayed if the history, physical examination or laboratory findings (high diastase values) indicate that acute pancreatitis is associated with the acute gallbladder condition.

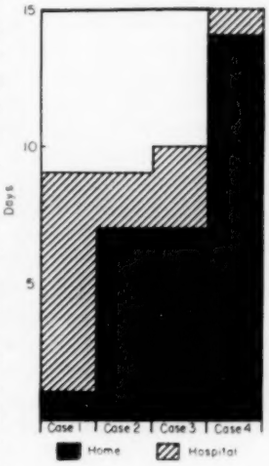

Chart 3.—Deaths: Three of the 4 patients who died had been treated at home from seven to fourteen days. In case 1 the period of hospitalization was unduly prolonged.

Twenty-eight patients had cholecystostomy with a mortality of 10.7 per cent. Removal of the gallbladder is obviously more desirable, but in a few cases it is better to rely on simple drainage.

The high mortality that is associated with this procedure reflects its use in the more serious cases. We believe that a tendency to perform a greater number of cholecystostomies has been partly responsible for lowering our mortality. In general, cholecystostomy has been utilized under the fol-

2. Allen, A. W., and Wallace, R. H.: Acute Cholecystitis, Arch. Surg. **43**:762 (Nov.) 1941.
3. Quigley, T. B.: Biliary Surgery in the Aged, New England J. Med. **221**:970 (Dec. 21) 1939.

lowing circumstances (table 3): (1) in elderly or poor risk patients in whom a well defined mass can be demonstrated in the gallbladder region, (2) in the seriously ill patients who obviously cannot stand a formidable operative procedure, (3) when an abscess is encountered about the gallbladder and the general peritoneal cavity is walled off and (4) when for technical reasons it would be extremely difficult to remove the inflamed gallbladder, especially when the structures cannot be properly identified. It is better for the surgeon to drain the gallbladder if technical difficulties make him uncertain of the correct procedure. We advise that the gallbladder of such patients be removed within two or three weeks during the same hospital admission. However, if the patient is elderly or a poor risk, this may be postponed indefinitely in the hope that he will encounter no further difficulty.

The incidence and dangers of perforation have contributed to the differences of opinion in the treatment of acute cholecystitis. It has been pointed out that, the longer the operation is delayed, the greater is the incidence of perforation with a resultant higher mortality rate. The perforation usually is sealed off by the adjacent structures and an abscess is formed in the region of the gallbladder. A free perforation with escape of the contents of the gallbladder into the peritoneal cavity is relatively infrequent. This danger is probably greater for patients who have had previous abdominal surgery with fixation of the omentum elsewhere. We have had 2 patients in the last five years with a free perforation. Both were subjected to early operation because of the signs of generalized peritonitis, and both recovered. As a rule, persistent pain associated with increasing local signs of inflammation implies that the gallbladder has perforated and that an extracholecystitic abscess is forming.

Occasionally this has been unexpectedly encountered because the signs and symptoms were so mild. Therefore early hospitalization and frequent evaluation of the patient's progress are important if this complication is to be avoided and a low mortality maintained.

The incidence of complications associated with acute cholecystitis is high, 24 per cent. The majority of these are associated with the pulmonary system. Wound infections were second in frequency.

There were four deaths among the 146 patients operated on for acute cholecystitis. It is of some significance that all 4 of these patients had had their disease at least eight days before operation (chart 3). Three of the 4 patients had had the condition for seven to fourteen days before entrance to the hospital, and all were operated on within three days after admission to the hospital. One patient, however, was sent to the hospital within twenty-four hours and conservative measures were followed for one week. In retrospect we feel that this patient should have been operated on earlier. The cause of death of 3 of the patients was infection. One patient had an Escherichia coli septicemia, while another had a peritonitis due to the same organism. In addition to acute cholecystitis 2 patients had a stone located outside the gallbladder. One death was the result of a cranial intraventricular hemorrhage.

SUMMARY

The patient with acute cholecystitis should be hospitalized as soon as the diagnosis is established, regardless of how mild the symptoms may seem. It is a common and serious condition with possibilities that cannot be predicted except by frequent evaluation of the patient's progress. Clinical groups based on the duration and severity of symptoms and their response to standard conservative measures provide a clue to the selection of the proper time for surgery, either early or delayed. Sufficient time must be allowed to hydrate the patient properly and prepare him for operation. Rarely does a patient require emergency surgery. A mortality of 2.6 per cent was obtained over a period of five years in the surgical treatment of 146 cases of acute cholecystitis. The incidence of common duct stones associated with acute cholecystitis was 14.9 per cent. Our experience indicates that, although early hospitalization is ideal from the standpoint of the patient, a low mortality can be obtained regardless of whether he is seen early or late, provided he is treated as an individual surgical problem.

ABSTRACT OF DISCUSSION

Dr. Frank Glenn, New York: At the New York Hospital Dr. Heuer and I have, over the past nine years, kept a careful account of patients we have treated for acute cholecystitis, and we have adhered to a policy of operating on all after adequate preoperative preparation unless there is some contraindication. We have treated surgically 379 patients with acute cholecystitis. There have been no deaths in those under 40. Three deaths occurred in a group under 50, and the remainder occurred in patients over 50. It is in this group of patients over 50 that we most frequently see the complications associated with cholecystitis, and it is in this group that we see mortality occur regardless of whether they are treated medically or surgically. Individualizing should be encouraged. The adverse reports concerning the surgical treatment of acute cholecystitis are the result of inadequate preparation for operation, failure to recognize contraindications to surgical therapy and improper surgical technic. Our mortality rate in 379 cases of acute cholecystitis is 2.37 per cent, and we may compare that with a group of 1,176 nonacute cases in which the mortality rate was 2.71. Acute cholecystitis is essentially a disease of young adult life occurring most frequently in women of childbearing age. It may occur in younger and does occur in older persons. In the older it is almost without exception a complication of a long-standing biliary tract disease. The common type of patients with acute cholecystitis is therefore a good surgical risk. They will, in the majority of instances, recover from the attack, as the authors have pointed out, but they do so to enter later into the group that contribute to the mortality rate to biliary tract surgery today.

Dr. Henry F. Graham, Brooklyn: There are certain facts about acute cholecystitis that we should always keep in mind in every case. The first is that operation early in the disease, that is, in young people, is free from danger. Second, that operation early in the acute gallbladder attack has a low mortality. We collected a group with a mortality in 167 cases of 3.9 per cent. In 1 of those cases there was an acute pancreatitis. Heuer sometime ago showed 112 cases in which operation was performed before perforation had occurred, with a mortality of 1.8 per cent, and the Postgraduate gallbladder clinic shows a mortality for acute cholecystitis without pancreatitis of 2.9 per cent. The third point is that no surgeon can determine the exact disease process present in the gallbladder by any clinical or laboratory examination. I have operated on patients who seemed to have no acute inflammation present and have taken out a gangrenous gallbladder. In the fourth place, infection is usually negligible during the first few days. Dehydration and other complicating factors are late manifestations of the disease. What operation to do in each individual case seen late is debatable and must be carefully considered.

Dr. D. W. Barrow, Lexington, Ky.: In an analysis of 167 cases of acute cholecystitis recently made no other factor was so closely correlated with the mortality rate as the interval elapsing between onset of symptoms and hospitalization. Of the 167 patients, only one fifth, 20.6 per cent, came within twenty-

four hours after onset of symptoms. The mortality rate in this group was 3 per cent, and, if the 2 patients who died following cholecystectomy through an incision originally intended for an appendectomy are excluded, the mortality rate was zero. Of the patients coming to the hospital one to three days after onset the mortality rate was 6 per cent, and of those coming more than three days, who formed more than half the series, the mortality rate was 10 per cent. The patients in these groups were treated both by prompt operation after adequate preoperative preparation and by conservative measures. As far as we could tell, the mortality rate, particularly in the third group, was about the same when treated in either way, which reemphasizes the importance of bringing the patients to the hospital early before too great damage to the liver and body homeostasis has occurred. In this group of 167 patients, there was no way in which the subsequent clinical course could be determined by any method available. Every patient with early acute cholecystitis, even though the initial manifestations may be mild, should be considered as potentially seriously ill and measures including hospitalization intended to preserve physiologic function should be instituted promptly.

DR. MOSES BEHREND, Philadelphia: I have never subscribed to the idea that an acute cholecystitis was an emergency operation. Patients with acute empyema of the gallbladder have a high mortality and should not be operated on immediately. I do not believe that so many operations of cholecystostomy are necessary in the treatment of acute cholecystitis. These patients must be hospitalized. Home treatment, such as the giving of food and water, are prohibited. Instead they are given intravenous fluids and fluids by hypodermoclysis. I take exception to the belief that one cannot tell clinically by palpation and physical examination and by the pulse and temperature whether or not the symptoms are subsiding. I like the term "opportune time" for the operation, and the opportune time for these patients is the interval when all the symptoms of acute cholecystitis have subsided. They will subside if they receive absolutely nothing by mouth. I do not fear perforation, because if these patients are hospitalized the complication is not a serious factor. If the gallbladder should perforate, the patient can be operated on immediately. At operation there is not any mechanical difficulty in recognizing the structures during an attack of acute cholecystitis if the symptoms and signs are allowed to subside. This is one of the reasons why I have not performed a cholecystostomy for at least ten years in these acute cases. With the use of a long handled knife it is easy to cut along the peritoneal covering of the common duct, cystic duct and the gallbladder itself; then by teasing the peritoneal structures away with a curved scissors—blunt, not pointed—the structures around the foramen of Winslow can be definitely recognized.

DR. ELLIOTT C. CUTLER, Boston: Like Dr. Behrend, I believed one could withhold surgery until most of these patients got well. The trouble is that the mortality figures under those circumstances were more than double those we now present. Only when we carried out cholecystostomies on these critically ill, elderly people and people with burst gallbladders or seriously incapacitated poor risk individuals did our mortality rate remain high. A low mortality requires individualization of every patient. We have been through just the same thing in appendicitis. We are reaching the same philosophical attitude toward the biliary tract as a whole. Each case is different. I am satisfied that our mortality has been improved and I am satisfied that a large percentage of the improvement was due to numerous cholecystostomies, much as I despise that operation. Two days ago a man came into the hospital with intestinal obstruction and vomiting. He had been sick for ten days. We gave him an Abbott-Miller tube, inflated him, and the gallbladder was blown off free. I wasn't going to tackle a poor risk patient who had a blown off gallbladder and a peritonitis by trying to take the gallbladder out. I sewed the tube in and left his gallbladder, and he made a prompt recovery. He may have to have his gallbladder out, but he will be alive. I would reemphasize the need for individualization. In those who seem to be doing pretty well one can wait and do an operation of election in three to six days, but if they don't improve steadily and rapidly, one had better perform an operation.

THE PHENOMENON OF "BLACK DERMOGRAPHISM"

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The term "black dermographism" designates the fact that under certain conditions a well defined black line appears where the skin is stroked with certain metals.

This phenomenon was first reported by the Russians Emdin and Kusmenko [1] in 1925. They contrasted the well known red and white dermographisms with black dermographism and stated that only the latter was to be regarded as a true one, i. e. "actual writing on the skin," since both the white and red dermographisms are due to stimulation of the nerve and muscle fibers of the blood vessels of the skin.

According to these authors, the black "writing" which appears on the skin following application of certain blunt metallic implements with moderate pressure represents not a chemical but a physical process due to the particles of the metal rubbed off by friction and remaining on the skin. While they originally assumed that a hysterical condition was a necessary prerequisite for the phenomenon, Emdin [2] later retracted this idea.

TABLE 1.—*Metals Producing Black Dermographism on Prepared Skin*

Metal	Reaction	Hardness
Silver	Positive	2.5 - 3
Copper	Positive	2.5 - 3
Aluminum	Positive	2 - 3
Nickel	Positive	
Zinc	Positive	2.5
Tin	Positive	1.5 - 1.8
Lead	Positive	1.5
Brass	Positive	3 - 4
Gold (under 18 carats)	Positive	2.5 - 3

Breitmann [3] was the next to study this phenomenon. He observed that the black dermographism appeared not only in women who used face or body powder but also in factory and dock workers who had never used powder in their lives. Furthermore, Markow, Beilin and Minkina [4] have pointed out that an especially high incidence of black dermographism is encountered among workers engaged in particularly dusty occupations (cement mixing, stucco work and the like). Breitmann [3] advanced a chemical theory and held that the appearance of black dermographism is dependent on the character of the skin lipoids. He was of the opinion that finely dispersed particles of the metals are deposited in the upper layers of the skin as the result of some unknown alterations of the lipoid metabolism of the skin. Breitmann based this assumption in part on the observation that the black lines will not appear when the skin is washed with alcohol or ether, thereby temporarily removing the skin lipoids. Moreover, this author supposed that the phenomenon usually appears in association with some endocrine disturbance, especially of the thyroid gland.

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Read before the Section on Dermatology and Syphilology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1942.

1. Emdin, P. J., and Kusmenko, A.: On Black Dermographism, Medicinskaja mysl. **3**: 72, 1925.
2. Emdin, P.: Ueber den schwarzen Dermographismus, München. med. Wchnschr. **77**: 2055, 1930.
3. Breitmann, M.: Zur Frage des schwarzen Dermographismus, Med.-biol. Ztschr. **4**: 29, 1928; München. med. Wchnschr. **76**: 634, 1929.
4. Markow, Beilin and Minkina: Klin. med. (russ.), 1930, no. 5.

This chemical theory was supported by Russinow and Sutorichin [5] and Jurjew.[6] The former described an instance of black dermographism in a patient suffering from chronic copper poisoning. Leščenko [7] was unable to decide whether to believe in the mechanical or the chemical explanation but states that in his experience

TABLE 2.—*Metals Incapable of Producing Black Dermographism on Prepared Skin*

Metal	Reaction	Hardness
Gold (up to 18 carats)	Negative	2.5 - 3
Platinum	Negative	4.3
Iron	Negative	4 - 5

TABLE 3.—*Composition of 18 and 14 Carat Gold*

Composition of 18 carat gold:	Composition of 14 carat gold:
80% fine gold	60% fine gold
15% copper	35% copper
5% silver + zinc	5% silver + tin

the phenomenon occurs chiefly in neurotic persons as well as in patients with organic conditions.

The German school of thought (Hauck and Dietel,[8] Krantz,[9] Hosp,[10] Bork,[11] Dietel,[12] Joch,[13] Riehl [14]), on the other hand, adhered strictly to the pure physical explanation. Goldschlag [15] and Koga [16] also subscribed to this view. Hauck and Dietel [8] emphasized, however, the necessity of differentiating between a "true" black dermographism, which occurs without any previous preparation of the skin, as they claim, in only a small percentage of human beings (2.7 per cent), and that type which can be produced at will in any one by the preceding application of zinc oxide. Hosp [10] reports that he was able to produce positive results in every one tested under suitable conditions, even in corpses. Finally, it is of interest to note that the phenomenon can be produced not only on the human skin but also on filter paper [9] and cloth.[15]

ORIGINAL INVESTIGATIONS

The phenomenon of "black dermographism" can under certain conditions be regularly evoked with the use of a number of different metals (figs. 1 and 2). It should be noted at this point that in order to produce the black lines on paper (fig. 3), cloth, wood and occasionally on human skin it is sometimes necessary to perform as many as six heavy strokes on the same line. The metals capable of producing a positive reaction on a powdered skin are listed in table 1; metals tested and found incapable of evoking this phenomenon are listed in table 2. Gold occupies an intermediate position: gold finer than 18 carats belongs to group 2, while gold less fine than 18 carats belongs in group 1. This is probably due to the higher copper content of the lower grade gold (table 3).

Most of our experiments were performed with a half-dollar coin of a gross weight of 192 grains, consisting of 173.61 grains of silver and 19.29 grains of copper. However, numerous tests made at random have shown that all the metals mentioned in table 1 constantly react in the same manner.

The phenomenon of black dermographism can be evoked only when the skin, paper, cloth or other surface is dusted with certain inorganic powders as listed in table 4. Table 5 presents a list of those inorganic powders which do not evoke dermographism.

Lastly, table 7 presents a summary of all chemicals tested. It shows that with the exception of tin and titanium salts, which constantly produce positive results, and of bismuth and silver salts, which regularly give negative findings, all other metals include both positive and negative compounds. Thus some salts of calcium, magnesium, potassium, sodium, zinc, copper, silicon and so on constantly produce positive, while others of the same metals give negative, results. The response to a given salt is always the same regardless of the metal used in stroking, if carried out on the same surface (skin, paper, and so on). However, not infrequently a given substance will produce a negative reaction on the skin and a positive reaction on coarse paper (table 7). This may possibly be explained by the highly hygroscopic nature of some compounds, which are able to absorb even the slight moisture of a clinically normal skin, thus tending to obviate the friction.

Regarding face powders, it should be pointed out that any kind—cheap or expensive—permit the elicitation of black "writing." Twenty well known brands of face powder were tested in this respect. Face powder consists principally of finest talcum, titanium dioxide, magnesium stearate, calcium carbonate, insoluble lake colors and synthetic perfume. Of these ingredients, titanium dioxide and calcium carbonate make for strongly positive reactions.

Dust, notably street and factory dust, is also capable of preparing the skin for black dermographism.

Despite many consultations with chemists, physicists and metallurgists, we have been unable to set up any

TABLE 4.—*Substances in Powder Form Reacting Positively with the Metals Listed in Table 1*

Aluminum hydroxide	Magnesium oxide
Barium sulfate	Magnesium carbonate
Barium oxide	Mercurous iodide (yellow)
Barium sulfide	Potassium sulfide
Calcium carbonate	Potassium sulfite
Calcium sulfate	Silica dioxide
Calcium oxide	Sodium oxalate
Calcium carbonate	Sodium fluoride
Cobalt carbonate (purple powder)	Tin dioxide
Cobalt phosphate purple powder)	Tin oxide
Copper monochloride	Titanium oxide
Iron sulfate	Titanium dioxide
Ferric phosphate	Zinc oxide
Lead carbonate	Zinc sulfate
Magnesium ammonium phosphate	

kind of principle according to which it might be predicted whether a given inorganic powder will or will not give rise to this phenomenon. Although it is true that organic compounds practically never produce positive results (sodium oxalate being an exception), it is equally true that many inorganic salts consistently fail to produce reactions. The most obvious explanation is, of course, the varying degrees of hardness of the powdered substances. While we accept this explanation, there are several apparent exceptions: iron carbonate

5. Russinow, A. J., and Sutorichin, W. N.: Irkutsk m. J. **7**: 345, 1929.
6. Jurjew, F. S.: Klin. med. (russ.) **6**: 489, 1928.
7. Leščenko, G.: Trudy ukrain, psichonevr. Inst. **7**: 117, 1928.
8. Hauck and Dietel, F.: Chemische und klinische Untersuchungen zur schwarzen Hautschrift, Zentralbl. f. Haut- u. Geschlechtskr. **31**: 413, 1929.
9. Krantz, W.: Zur Frage des schwarzen Dermographismus, München. med. Wchnschr. **76**: 1295, 1929.
10. Hosp, E .: Untersuchungen über die "Schwarze Hautschrift," Dermat. Wchnschr. **91**: 1895, 1930.
11. Bork, A.: Ueber das Wesen des schwarzen Dermographismus, Ztschr. f. d. ges. Neurol. u. Psychiat. **123**: 224, 1930.
12. Dietel, F.: Ueber schwarze Hautschrift, Dermat. Wchnschr. **92**: 950, 1931.
13. Joch, W.: Zur Frage der schwarzen Hautschrift (Dermographismus niger), Erlangen, Dissertation, 1931.
14. Riehl Jr., G.: Schwarze Hautschrift, Zentralbl. f. Haut- u. Geschlechtskr. **37**: 325, 1931.
15. Goldschlag, F.: Demonstration der schwarzen Hautschrift, Zentralbl. f. Haut- u. Geschlechtskr. **32**: 795, 1930.
16. Koga, K.: Ueber die schwarze Dermographie, Hifu-to-Hitsunyo **1**: 451, 1933.

(hardness 4) and zinc carbonate (4.5) produce negative results with silver and copper, while iron sulfate (2) and barium sulfate (3) bring on the phenomenon. Although these exceptions cannot be accounted for on a single basis, two possible sources of error should be mentioned: (1) one chemical or another, despite due care, might have contained small amounts of impurities capable of altering the hardness; (2) the references regarding the degree of hardness of ordinary chemical compounds not used in the metallurgic industry are difficult to obtain and often quite old and at variance.

Table 6 shows how differently the various salts of the same metal used in preparation of the skin react, even such closely related compounds as sodium sulfate and sodium sulfite, for example. We would stress that, with the exception of sodium sulfite, all sulfur compounds react negatively and that therefore the suggestion that black dermographism might be due to a sulfur compound (e. g. silver sulfide) may be promptly dismissed.

TABLE 5.—*Substances in Powder Form Reacting Negatively with the Metals Listed in Table 1*

Aluminum sulfate	Silicic acid (ortho)
Aluminum silicate	Powdered silver
Barium iodide	Silver acetate
Bismuth salicylate	Silver lactate
Bismuth subgallate	Silver nitrate
Bismuth citrate	Sodium sulfite
Calcium diphosphate	Sodium sulfate
Calcium triphosphate	Sodium bicarbonate
Calcium lactate	Sodium phosphate
Copper arsenate	Sodium chlorate
Copper stearate	Sodium oleate
Iron oxalate	Sodium borate
Iron carbonate	Sodium benzoate
Lead oxide	Sodium bitartrate
Magnesium salicylate	Sodium chloride
Magnesium trisilicate	Trisodium phosphate
Magnesium stearate	Strontium salicylate
Magnesium peroxide	Sulfur, precipitated
Mercuric iodide (red)	Sulfur, sublimed
Mercurous chloride	Sulfur, washed
Potassium tartrate	Zinc hydroxide
Potassium titan fluoride	Zinc stearate
Potassium percarbonate	Zinc carbonate
Potassium nitrate	Talc
Potassium chloride	

TABLE 6.—*Differences Between the Reactions on Skin and on Paper with Certain Compounds*

Substance Tested	Reaction	
	On Skin	On Paper
Barium iodate	Negative	Positive
Bismutum carbonate	Negative	Positive
Acidum potassium pyro antimonate	Negative	Positive
Mercurous chloride (electrolytic)	Negative	Positive

Hygroscopic and crystalline powders are ineffective in these experiments. Furthermore, results are always negative when the experiment is performed on a smooth, slippery surface, such as damp skin due to perspiration or wetting, greasy skin, glass or smooth, shiny paper. This is due to the fact that the nature of these surfaces eliminates friction, and physical junction of metal and powder is thus prevented.

When any of the powders listed in table 4 are applied to greased skin, the immediate reaction is negative; after some time (from half an hour to three hours), however, the reaction becomes positive if the powder has absorbed the fat. Similar observations have been made on skin areas sprinkled with water or damp with sweat; as soon as the powder has eliminated the moisture, the black lines can again be made to appear. Failure of the black dermographism to appear on the skins of animals including cats, rabbits and guinea pigs is probably due largely to the relatively high moisture content of their skins as well as to the unusual thinness of the epidermis. The skins of these animals regularly fail to react in this manner even when covered with those inorganic powders which bring on very strongly positive results on human skin. The importance of the relative thickness of the horny layer can also be observed in human beings. Thus it has been shown that the black lines can be evoked especially readily on the volar surface of the hand, where the

TABLE 7.—*Summary of the Chemicals Tested for Black Dermographism*

Metal	Substance Tested	Reaction	Hardness
Aluminum	Aluminum hydroxide	Positive	..
	Aluminum sulfate	Negative	2
	Aluminum silicate (fullers' earth)	Negative	..
Barium	Barium sulfate	Positive	3
	Barium oxide	Positive	..
	Barium sulfide	Positive	..
	Barium iodide	Negative	..
Bismuth	Bismuth salicylate	Negative	..
	Bismuth subgallate	Negative	..
	Bismuth citrate	Negative	..
Calcium	Calcium sulfate	Positive	3
	Calcium diphosphate	Negative	..
	Calcium triphosphate	Negative	..
	Calcium oxide	Positive	..
	Calcium lactate	Negative	..
	Calcium carbonate	Positive	3
Cobalt	Cobalt carbonate (purple powder)	Positive	..
	Cobalt phosphate	Positive	..
Copper	Copper arsenate	Negative	..
	Copper monochloride	Positive	..
	Copper stearate	Negative	..
Iron	Iron sulfate	Positive	2
	Iron oxalate	Negative	..
	Ferric phosphate	Positive	..
	Iron carbonate	Negative	4
Lead	Lead carbonate	Positive	..
	Lead oxide	Negative	2
Magnesium	Magnesium ammonium phosphate	Positive	..
	Magnesium salicylate	Negative	..
	Magnesium oxide	Positive	6
	Magnesium trisilicate	Negative	..
	Magnesium carbonate	Positive	4.5
	Magnesium stearate	Negative	..
	Magnesium peroxide	Negative	..
Mercury	Mercuric oxide (red)	Negative	..
	Mercurous iodide (yellow)	Positive	..
	Mercurous chloride	Negative	..
Potassium	Potassium sulfide	Positive	..
	Potassium tartrate	Negative	..
	Potassium titan fluoride	Negative	..
	Potassium percarbonate	Negative	..
	Potassium nitrate	Negative	2
	Potassium chloride	Negative	2.5
	Potassium sulfite	Positive	..
Silicon	Silicon dioxide	Positive	..
	Silicic acid (ortho)	Negative	..
Silver	Powdered silver	Negative	..
	Silver acetate	Negative	..
	Silver lactate	Negative	..
	Silver nitrate	Negative	..
Sodium	Sodium bicarbonate	Negative	..
	Sodium phosphate	Negative	..
	Sodium oleate (soft)	Negative	..
	Sodium oxalate	Positive	..
	Sodium fluoride	Positive	..
	Sodium borate	Negative	..
	Sodium benzoate	Negative	..
	Sodium bitartrate	Negative	..
	Sodium chlorate	Negative	..
	Sodium chloride	Negative	2.5
	Sodium phosphate	Negative	..
	Sodium sulfate	Negative	2-3
	Sodium sulfite	Positive	..
Strontium	Strontium salicylate	Negative	..
Sulfur	Sulfur, precipitated	Negative	..
	Sulfur, sublimed	Negative	1.5-2.5
	Sulfur, washed	Negative	..
Tin	Tin dioxide	Positive	6-7
	Tin oxide	Positive	..
Titanium	Titanium oxide	Positive	..
	Titanium dioxide	Positive	6
Zinc	Zinc hydroxide	Negative	..
	Zinc oxide	Positive	4-5
	Zinc stearate	Negative	..
	Zinc sulfate	Positive	..
	Zinc carbonate	Negative	4.5

horny layer is as a rule particularly well developed. It is generally more difficult to produce a reaction on a naturally oily skin than on a dry skin. It may be said, in short, that the result depends entirely on the amount of friction: when little pressure is exerted, far fewer particles can be rubbed off the metal by moist or greasy skin, or other smooth slippery surfaces (glass, shiny paper) than by skin with a rough, dry surface.

The black line can readily be washed off with water or rubbed off with a cloth. It is generally possible to cause the reaction to reappear after a short time. However, when a skin area previously treated with zinc oxide is cleansed with benzine or some other fat solvent or is washed thoroughly with soap and water, the phenomenon cannot be brought on again unless zinc oxide is reapplied to the skin. When the black line is removed

Fig. 1.—"Black dermographism" on skin dusted with zinc oxide, using a silver coin.

with ethyl acetate or benzene and the same sponge is rubbed over the unpowdered skin of a control subject, the black dermographism can be evoked by stroking the site with a metal. This is undoubtedly due to the transfer of some of the powder in the fat solvent medium; for the phenomenon cannot be evoked in this manner when the black line is rubbed off with plain water. Cleaning the coin with alcohol, ethyl acetate and the like does not prevent the appearance of the black line.

Since the possibility has to be considered that the fineness of a given powder might be the determining factor with regard to this phenomenon, experiments were undertaken with colloidal zinc oxide (granule size 1 micron). The results obtained with this substance were identical with those obtained with a coarse grained powder of the same compound.

Dr. J. W. Lentz made photospectrometric examinations of the black line produced by rubbing a half dollar and pure copper on pieces of filter paper previously sprinkled with various inorganic powders. He demonstrated that the chief constituent of the black line was silver in instances in which the phenomenon had been evoked with a silver coin (fig. 4) and copper (fig. 5) when copper metal was used. This conforms perfectly with the fact that minute black particles can be seen

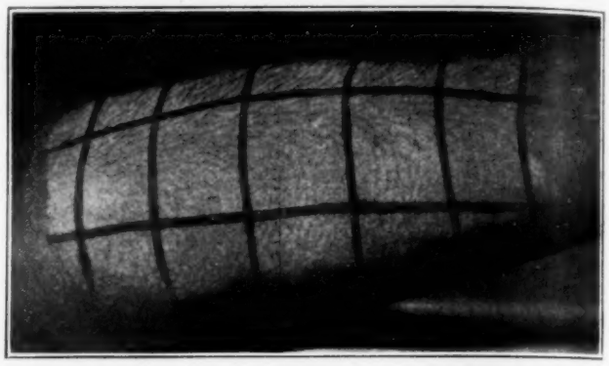

Fig. 2.—"Black dermographism" on skin dusted with titanium dioxide, using a silver coin.

when the skin is examined with a lens. It is certain, we believe, that the black lines are caused by metallic deposits.

COMMENT

Is the black dermographism to be regarded as a chemical or a physical phenomenon?

On the basis of the following facts, we are convinced that this is strictly a mechanical, and not an electrolytic, process: 1. Black dermographism occurs only in association with the use of those powders, salves and pastes leaving on the skin, paper, cloth or wood powdery residues which are harder than the metallic substance used for the "writing." 2. The harder the powder, the harder the metal which must be employed to evoke the black line on a suitable surface. For example, iron with a hardness of 4 to 5 does not "write" when zinc oxide (4.5) is used but brings out the black lines following application of extremely fine sand (hardness 7). 3. A considerable amount of friction is neces-

Fig. 3.—"Black dermographism" on paper towel dusted with zinc oxide, using a silver coin.

sary to produce the black lines. Mere pressing of the metal does not suffice, nor does gentle rubbing. The mechanical theory receives additional support from the facts that the manifestation appears immediately at the site of the stroke, that the skin must be dry for the phenomenon to occur, that the same result (black lines)

is obtained from the use of a variety of metals and of powders of various colors (white, yellow, purple) and that it is possible to demonstrate the presence of the metals (silver, copper and others) in the black lines by means of photospectroscopic or chemical analysis.[8]

Just why almost all organic and many inorganic powders fail to bring on the reaction is not as yet fully understood. This can be partly explained by their relatively low degree of hardness, particularly of the organic compounds, and also perhaps by the fact that these powders readily absorb water and thus tend to prevent the occurrence of the phenomenon by taking up some of the moisture in the skin, thereby diminishing friction. This view would seem to be supported by the observation that certain powders react negatively on the skin but positively on paper.

Is the black dermographism actually a form of dermographism?

Cases of red, white, yellow (Schürer,[17] Adlersberg and Perutz[18]), blue (Koschewnikow[19]) and purpuric (Macleod[20]) dermographism are erroneously so called because in these instances the appearance of the "writing" is due to certain responses in the cutaneous blood vessels and not to reactions of the surface of the skin itself. On the other hand, the designation "black dermographism" is incorrect, strictly speaking, since the writing takes place not on the epidermis per se but really on the powder dusted on the skin. Proof of this lies in the fact that the same effect can be produced on coarse paper, linen cloth, wood and other rough surfaces.

Black dermographism is not infrequently observed in women who wear trinkets and cheap jewelry of silver and gold on powdered areas. The same effect occurs on skin surfaces soiled with street, factory or mine dust.

In principle the phenomenon may be evoked on any human skin by the use of appropriate inorganic powders. It must be noted, however, that there are individual differences due largely to variations in the moistness and oiliness of the skin. The phenomenon will appear in all persons with dry, nonoily epidermis. The former assumption that hysteria, neurasthenia or endocrine disturbances play a role has to be rejected. The fact that the phenomenon can be evoked in the skin of a corpse conclusively demonstrates that this process cannot be regarded as a biologic reaction.[10]

SUMMARY

Black dermographism connotes the fact that under certain conditions a black line will appear at a skin site stroked with certain metals. Black dermographism not infrequently occurs in women wearing silver or cheap gold jewelry on powdered skin areas.

Black dermographism is a physical phenomenon. The earlier theory that it is of some biologic or diagnostic significance is erroneous.

Strictly speaking, the term "black dermographism" is a misnomer, since the reaction can be evoked not only on the skin but also on coarse paper, cloth and wood.

422 Medical Arts Building.

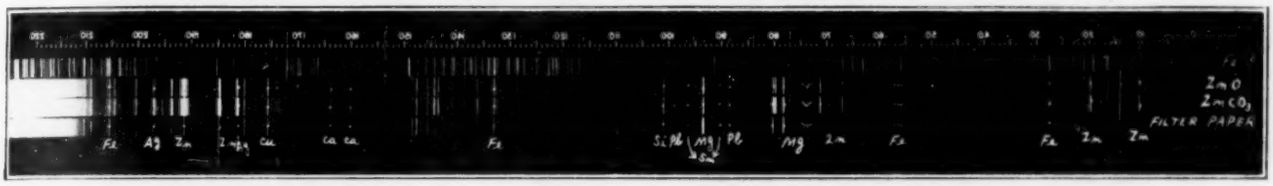

Fig. 4.—Spectrogram of a filter paper dusted with zinc oxide and stroked with silver coin, showing heavy deposit of silver in the black line.

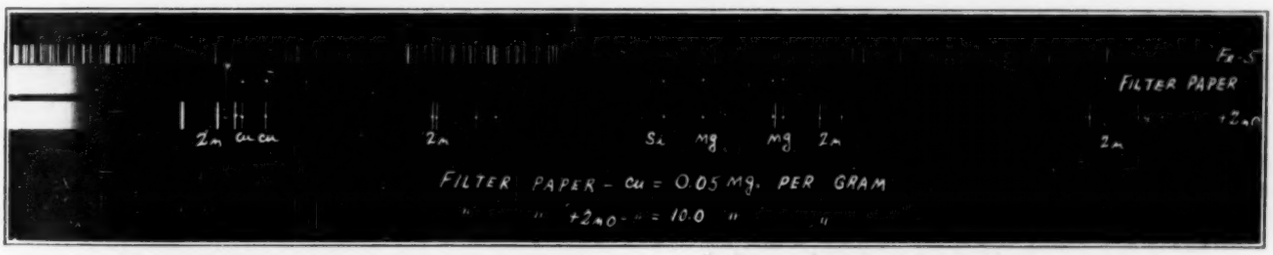

Fig. 5.—Spectrogram showing quantitatively the increase of copper (two hundred times more than that of the control) after a filter paper dusted with zinc oxide is stroked with copper.

ABSTRACT OF DISCUSSION

DR. SAMUEL M. PECK, New York: I thank the authors for clearing up many questions which I had about this condition in years past; it seems strange that it had not been reported previously in American literature. We meet this phenomenon in our clinical practice frequently. How often have most of us had patients come to us for some other condition and say "You know, I have too much acid in my system. All my rings are turning black on my skin." When they consulted me about what they should do about this, I was at a loss either to give them an explanation for the phenomenon or to offer any suggestions which might be of use. As has been pointed out, the term "dermographism" should be dropped, because we are not dealing with an urticarial phenomenon, and since the whole process is probably on a physical basis I have noted in a number of my patients that they do not always show this black writing on the skin under apparently similar conditions, such as wearing the same sort of jewelry and using the usual cosmetics and toilet soaps. In a number of cases the skin under wedding rings would turn black. This phenomenon occurred only at certain periods in their menstrual cycles. While I believe that this might be due to a difference in the dryness or moisture of the skin, this physical condition of the skin was influenced indirectly by the endocrines and therefore might then be said to be on a glandular basis.

17. Schürer, J.: Ueber ikterische Hautschrift, Deutsche med. Wchnschr. **48**: 593 (May 5) 1922.
18. Adlersberg, D., and Perutz, A.: Untersuchungen über die Anreicherung von im Blute kreisenden Farbstoffen in Hautquaddeln: Ein Beitrag zur Frage der ikterischen Hautschrift, Klin. Wchnschr. **11**: 942, 1932.
19. Koschewnikow, P. W.: Der blaue Dermographismus, Arch. f. Dermat. u. Syph. **171**: 238, 1935.
20. Macleod, J. M. H.: Diseases of the Skin, London, H. K., Lewis & Co., 1920.

DR. NELSON PAUL ANDERSON, Los Angeles: This phenomenon was described in the English literature under the term of "metallic writing" at least over fifty years ago (Ferrier, David: Note on a Peculiar Condition of the Skin in Paraplegia, *Brit. M. J.* **1**:341, 1879). The first observation that was made was on patients who had a cerebral hemorrhage. The subsequent edema on one side of the body presented metallic writing on that side, while the other side of the body did not present such a phenomenon. The first investigators in England thought that this was due to some chemical change in the skin. Later they made further investigations, which I believe included most all of the metals that Drs. Urbach and Pillsbury have mentioned.

DR. MARION B. SULZBERGER, New York: Dr. Anderson has pointed out that the fact that metals will sometimes produce black marks on the skin has been known for a long time. However, I think that Dr. Urbach and Dr. Pillsbury contribute something of great interest when they show, not that metals will write on the skin, but the important role which certain powders at the skin surface play in producing this form of writing. In other words, many of the cases that may have been previously considered to be due to peculiar changes in the sweat and in the chemistry of the skin surface and which were sometimes even explained away as due to stigmatization and hysteria may simply be produced by the powder on the surface of the skin.

DR. PAUL E. BECHET, New York: In my library there is a monograph in French of four or five hundred pages, published some sixty years ago, solely on the subject of dermographism. The book contains a full chapter on black dermographism and, what is of great interest, many paragraphs of that chapter are devoted to the important role played by black dermographism in demonology black magic and witchcraft, which caused so much torture and burnings at the stake in the Middle Ages. There is no question of a doubt in my mind that many ordinary dermatoses because of their mistaken association with leprosy, demonology and witchcraft have caused the torture, violent death and social excommunication of hundreds of innocent persons who were unfortunate enough to be born in the ignorant ages.

DR. ERICH URBACH, Philadelphia: I would be much indebted to Dr. Anderson if we could get the reference, because we took the pains to consult the ten best known dermatologic textbooks in the country, and we found the name "black dermographism" or something of this sort only in the book by the Suttons. All the other books do not mention it at all and therefore we are not familiar with the term "metallic writing" and would like to know more about it. Dr. Sulzberger's observation is more interesting than ours, but it would need some explanation whether it is chemical or physical. Referring to Dr. Bechet, I have not mentioned that in Europe this kind of black dermographism was used quite often as magic in order to deceive people. I remember this kind of amusement very well when I was a boy. A man would come out and say "Now write your name on me" and this, of course, made a very deep impression on all the people.

Intellectual Honesty.—Two million soldiers and sailors in training centers and in stations in the tropics are living under sanitary controls that are far beyond anything that most of them ever knew existed. Other millions are learning the principles and practices of first aid in case of injuries and tens of millions are taking keen interest in problems of diet. Demands in the armed services, in sanitation and medicine, in industry and agriculture for young men and women with scientific training are far beyond the capacity of educational institutions to supply. To carry on almost any of the work of the world in the future some kind of serious scientific training will be necessary, with the result that the uses and the methods of science will always be in the minds of people, and often also the clear thinking and the intellectual honesty it requires.—Moulton, F. R.: Science and Technology, *Am. A. Advance. Science Bull.*, July 1942, p. 34.

TUMORAL CALCINOSIS

ALBERTO INCLAN, M.D.
WITH THE COLLABORATION OF DR. P. LEON AND DR. M. GOMEZ CAMEJO, PATHOLOGISTS
HAVANA, CUBA

Under the name tumoral calcinosis I am presenting 3 unusual cases of a calcified growth of unknown etiology and pathogenesis to which I have found but little reference in a careful search of the medical literature. All 3 patients with this condition have been treated at the Mercedes Hospital in Havana, 1 having been seen in the cancer service and the other 2 in the orthopedic service. It is interesting to note that all 3 of the patients are Negroes and that they live at points far distant from Havana and from one another.

CASE 1.—P. Q., a Negro girl aged 18 years, first seen Oct. 17, 1934, complained chiefly of pain and of a tumor in the left gluteal region. Her story was that two years earlier she had suffered a fall, receiving a blow on the left gluteal region. She attached no importance to her injury, which was in no way disabling. Shortly before being seen, however, she began to notice slight pain on sitting and a swelling at approximately the site of her previous injury. Physical examination was largely negative except for the condition in the left gluteal region. This region appeared decidedly prominent but without color changes of the skin. There was no venous dilatation nor local increase in temperature. Palpation revealed the presence of a large, hard mass of bony consistency. This mass was smooth, rounded and attached apparently to the ilium. Roentgenograms showed a dense osteochondromatous shadow, superimposed on the shadow of the ilium. The central portion of the shadow was of great density, contrasting with which there was greater permeability of the marginal portions (the lateral view). Routine laboratory studies were made, revealing a slight anemia and a leukocyte count of 14,000, with an essentially normal differential count. A diagnosis of giant osteochondroma of the ilium was made and operation was advised.

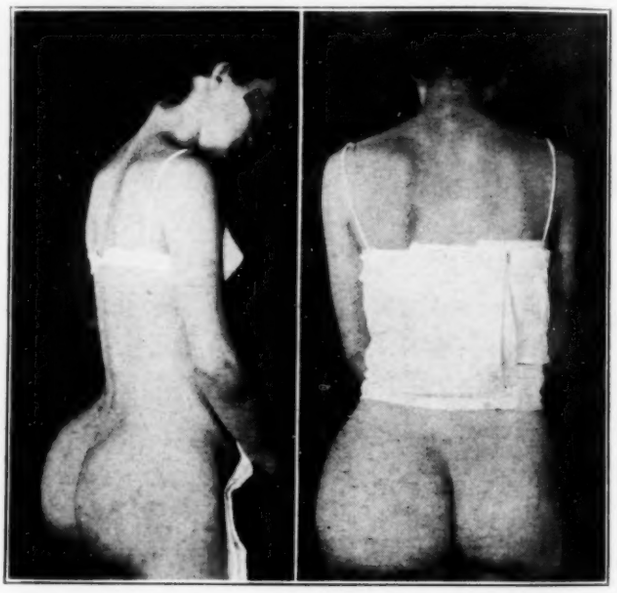

Fig. 1 (case 1).—Appearance of the left gluteal region before operation.

On December 19, under spinal anesthesia, I made a long incision along the iliac border, planning to reflect away the gluteal muscles and reach the point of attachment of the tumor to the bone. However, I was greatly surprised to find the external iliac fossa uninvolved and a huge tumor mass of bony

Read before the Section on Orthopedic Surgery at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

consistency within the muscles themselves. I therefore made a second incision in the midline of the gluteal region and perpendicular to the first incision, reaching the tumor as soon as the fascia was divided. There was no plane of cleavage, all three gluteal muscles and their bursae being involved, so that I began doing a massive resection, starting from the

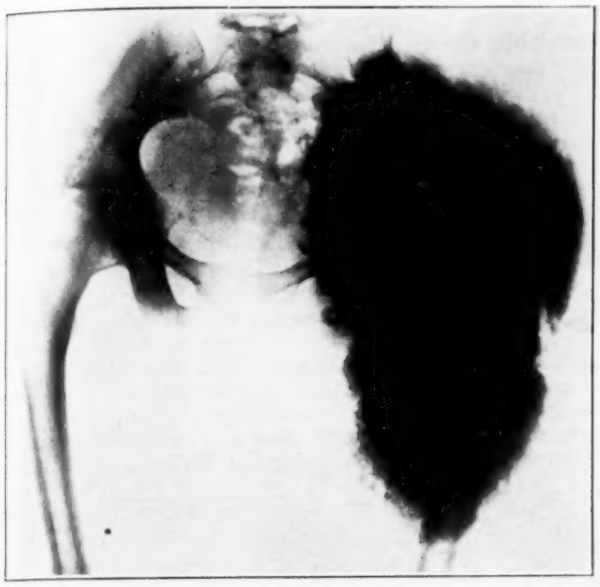

Fig. 2 (case 1).—Shadow on left ilium similar to giant osteochondromatous tumor.

inferior portion of the tumor. At this point I found the sciatic nerve compressed by the tumor. When it was incised, this tumor proved to be different from any I had ever seen, being composed of numerous cells or cavities which were filled with a white, milky, dense liquid somewhat like magnesia magma, which I took to be colloidal calcium. In other portions of the tumor the muscle was infiltrated and apparently affected by a more advanced calcifying process. These portions had a putty-like consistency and gave a gritty sensation on being cut. The two pathologic types alternated with each other in different portions of the mass, which involved all the gluteal muscles, sometimes showing large cystlike deposits of the

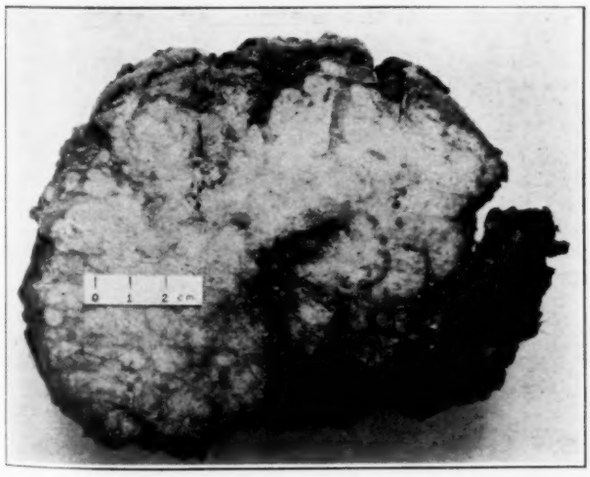

Fig. 3 (case 1).—Cut section of the gluteal tumor showing large compact calcareous deposits.

aforementioned milky substance. The blood supply was meager. I resected about half of the tumor, closing the skin and leaving a small drain at the most dependent portion of the incision, for it was rather difficult to occlude the large cavity that was left after the tumoral mass had been removed. This portion of the wound healed slowly, draining serous exudate containing amorphous calcium salts for a period of two weeks.

Because of the unusual findings at operation, I carried out some complementary investigations on the patient. A Mantoux test, chest roentgenograms and determination of the sedimentation rate which were all normal helped to rule out tuberculosis. Various bacteriologic studies of the liquid found within the tumor proved it to be sterile. The blood calcium was 11.4 mg., the phosphorus was 4.7 mg. and the phosphatase level was 3.28 Bodansky units. Chemical studies of the liquid showed the presence of calcium carbonate.

The pathologist's report was as follows:

Gross Examination.—The tumor was a hard mass which, when cut, appeared to be composed of large cavities full of a white milky fluid resembling colloidal calcium.

Microscopic Examination.—Slides were obtained by routine methods without previous decalcification. The tumor mass was composed of large calcareous deposits separated from one another by thick fibrous connective tissue trabeculae. The connective tissue found in the trabeculae was dense and fibrous, that found in the thinner trabeculae showing hyaline degeneration. The walls of the cavities were rich in macrophages and foreign body giant cells. The macrophages contained lipoid substances. Toward the periphery histiocytes charged with lipoid substances were seen, and the vessels showed perivascular lymphocytic infiltration.

Fig. 4 (case 1).—Section of one of the large calcareous deposits under low power magnification, limited by thick bands of fibrous connective tissue.

The patient received high voltage roentgen therapy following her operation, the remainder of the tumor diminishing in size after this treatment. Seven years after the operation no new calcified tumors have appeared either in the viscera or in the periarticular structures, which speaks against the possibility of this condition being a generalized calcinosis.

The diagnosis of neoplasm, either benign or malignant, may be eliminated. A careful search for parasites was made, though trichinosis is extremely rare in Cuba, and none were found in the numerous cut sections which were made and studied with a microscope. Myositis ossificans was also eliminated clinically, roentgenologically and microscopically.

CASE 2.—E. A., a Negro youth aged 19, first seen by my associates and me Sept. 17, 1935, complained chiefly of swelling and severe pain in the left hip. He stated that two years before, without suffering any injury, he began to notice a hard swollen area in the upper part of the left thigh which later spread proximally toward the hip joint and iliac crest. Pain was severe from the onset and seemed to be worse at night, keeping the patient awake. Walking did not aggravate the pain, nor did he notice limitation of motion at the hip, but he tired easily, so much so that he had to abandon his work.

Physical examination was negative except for the condition of the left hip and thigh. There was decided prominence of the posterolateral portion of the left thigh proximally, the circumference of the limb at that point being 60 cm. as compared to 49 cm. on the opposite side. No changes in the color of the skin and no prominent veins were visible. Palpation

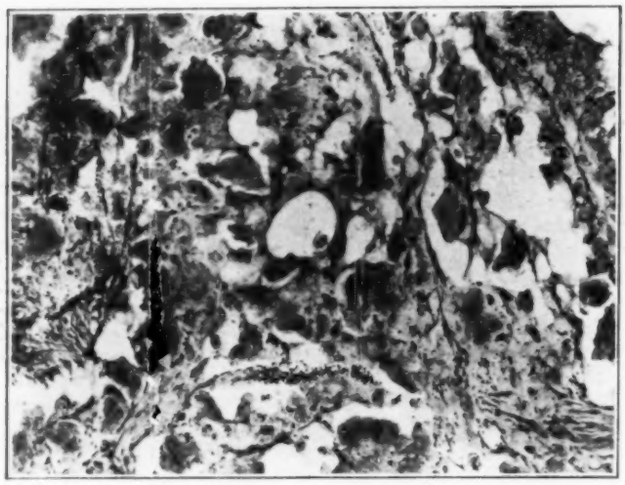

Fig. 5 (case 1).—Section of the calcareous globules which make up the characteristic deposits of the tumor and the connective tissue network (Rio-Hortega; medium power magnification; silver carbonate stain).

revealed the presence of a large hard tumor which appeared to be fixed to the underlying tissues but not to the skin. A similar tumor about the size of an orange was found in the sacral region. The skin over the second tumor appeared lighter in color and was adherent to the tumor mass. The most prominent portion of both tumors appeared soft and fluctuating. Roentgenograms showed the presence of extremely dense shadows with indefinite margins in the left trocanteric and gluteal regions and a cylindric dense shadow over the sacrum. Similar dense shadows, though of lesser size, were seen in the periarticular structures of the opposite hip. Examination of the stool revealed the presence of ascaris, hookworm and tricocephalus ova, but there was no occult blood. The Kahn and Meinicke reactions of the blood were negative and the blood count was well within normal limits.

The fluctuating portion of the sacral tumor was aspirated and 2 cc. of an odorless, thick, milky fluid was withdrawn.

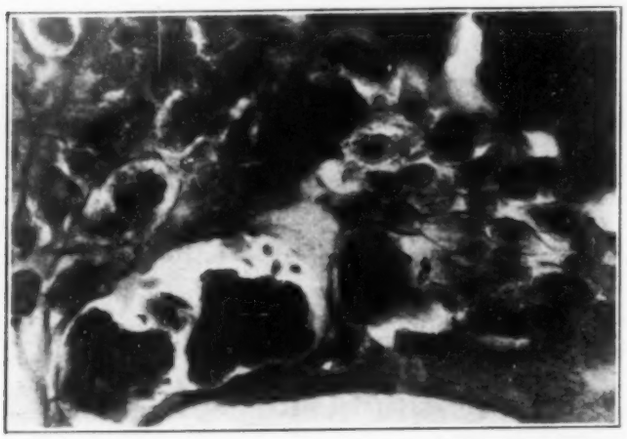

Fig. 6 (case 1).—Showing the intimate contact between the calcareous globules and the connective tissue network (Rio-Hortega; high power magnification; silver carbonate stain).

Chemical studies of this liquid showed a high albumin content and the presence of calcium carbonate in suspension. Microscopically amorphous calcium crystals but no cells or bacteria were seen. Cultures showed no growth and animal inoculations gave negative results.

A biopsy of the gluteal tumor was done which grossly showed the same pathologic type as that seen in case 1; I then extirpated the sacral tumor. The latter appeared to arise from the areolar connective tissue found between the aponeurotic origin of the latissimus dorsi and sacrospinalis muscles and the sacrum. This tumor was removed, together with the adherent skin, and lateral skin flaps were mobilized and brought across to close the defect.

I have been unable to have the patient come back for reexamination, though I have ascertained that he is alive nearly seven years after the operation and nine years after the onset of symptoms.

The pathologic report on the excised tumor was as follows:

Gross Examination.—The specimen was a rounded mass, doughy in consistency, the size of an orange and covered by skin on three fourths of its surface. On incision the tumor was found to be composed of cystic cavities, varying in size from 0.5 to 3 cm., which contained a white milky fluid. The walls of the cyst were smooth, well defined and clearly demarcated from the surrounding fibrous connective tissue.

Microscopic Examination.—Sections through the borders of the cysts showed large calcareous deposits which rested on an ill defined cellular stratum in which numerous histiocytes and foreign body giant cells were seen. Under higher magnification an intense fibroblastic reaction was visible and also foamy plasma cells similar to those seen in xanthomas. The polymorphonuclear giant cells were seen to contain calcareous inclusions. Ovoid, double refractory bodies staining deeply

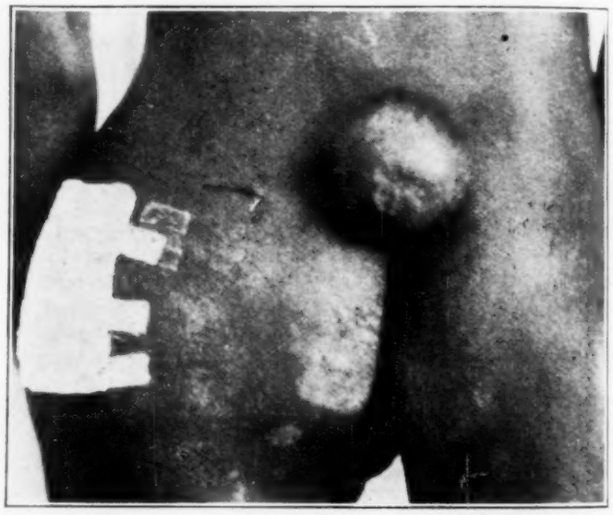

Fig. 7 (case 2).—Appearance of the tumor over the sacrum and the left gluteal region following biopsy of the latter.

with the basic stains were seen occasionally at the edge of the cavity. These bodies did not resemble any phase of the life cycle of any parasite known to us. Beyond the wall of the cavity there was areolar connective tissue rich in blood vessels and containing lesser amounts of deposited calcium salts. The vessels showed endarteritis and perivascular lymphocytic infiltrations. Toward the periphery and away from the cavity bundles of degenerating muscle fibers separated by dense fibrous connective tissue were seen.

CASE 3.—L. H. G., a Negro girl aged 10 years, seen by us on Dec. 5, 1940, complained chiefly of a tumor of the right elbow. The parents stated that three months previously they had noticed a swelling about 1 cm. in diameter on the posterolateral aspect of the child's right elbow. The tumor was not painful and grew rapidly without producing local or systemic symptoms of any kind. Motion of the elbow joint was free and not painful. She was seen by her local physician, who treated her with massage for a few days, with further increase in the size of the tumor. She was seen at another hospital when the tumor was the size of an orange. Aspiration revealed the presence of a milky liquid. X-ray examination revealed a large calcified tumor at the level of the lower end of the humerus. Laboratory examination revealed coagulation time normal, calcium 10.9 mg., urea 27 mg. and dextrose 90 mg. per hundred cubic centimeters. The Kahn reaction was negative.

A urinalysis showed numerous pus cells and renal pelvis cells in the sediment.

Physical examination was essentially negative except for the right elbow, in which a tumor the size of half an orange was seen on its posterolateral aspect. The tumor mass projected outward on each side of the triceps tendon, and its external portion was covered by distended shiny skin. Over this portion the tumor appeared soft and definitely fluctuating. The base of the tumor was hard and adherent to the epicondylar and epitrochlear muscular insertions. There was no increase in the local temperature or venous circulation and no regional lymphadenopathy. The position and shape of the tumor made me think that it arose from the subtricipital bursa, and the sharply outlined, very dense shadow led me to make a diagnosis of calcinosis or calcareous granuloma and decide on its removal.

The laboratory work done at our hospital revealed the following:

A blood count showed erythrocytes 4,250,000, hemoglobin 105 per cent, color index 1.02, leukocytes 8,000, lymphocytes 38 per cent, monocytes 2 per cent, neutrophils 54 per cent and eosinophils 6 per cent. The Kahn reaction was negative. Blood cholesterol was 232 mg., calcium 11.5 mg. and phosphorus 4.1 mg. per hundred cubic centimeters and phosphatase level 7.6 Bodansky units.

Under brachial plexus anesthesia an elliptic incision was made around the portion of skin which was adherent to the tumor. By blunt dissection the tumor was enucleated from under the triceps tension, which was found to be thinned out. The lateral portions of the tumor were calcareous and involved the epicondylar and epitrochlear muscles, from which it had to be carefully dissected in order that injury to the radial and ulnar nerves might be avoided. The wound was sutured in layers and the elbow was immobilized in plaster for ten days, the operative wound healing by primary intention. Postoperative roentgenograms showed that practically the entire tumor had been removed. Chemical analysis of the liquid found within the tumor showed a high content of calcium phosphates and carbonates. Bacteriologic studies gave negative results.

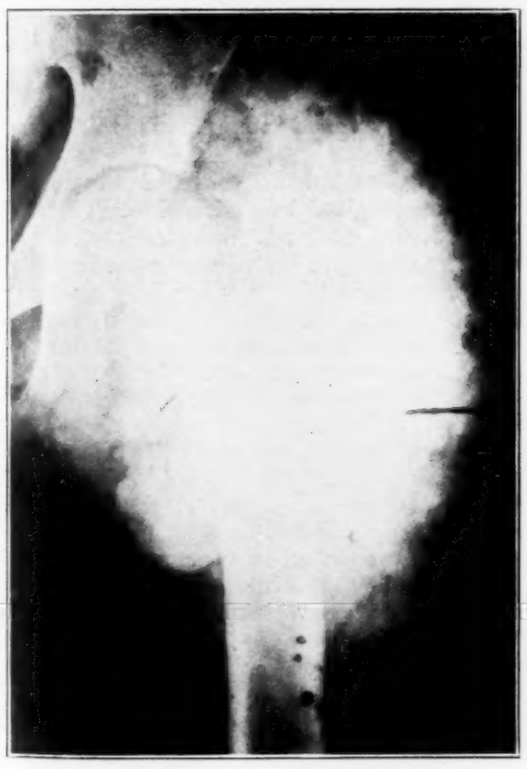

Fig. 8 (case 2).—Shadow of the gluteal tumor.

The pathologic report was as follows: This tumor was identical with that already described in case 1. The macroscopic appearance was practically the same, although the tumor mass was smaller.

The patient was readmitted Jan. 14, 1942. She stated that six months after being discharged from the hospital she noticed a small, hard, nonpainful nodule on the outer aspect of her left elbow. This nodule grew rapidly during the succeeding months without ever being painful or interfering with motion at the elbow joint. Three months after the onset of the first tumor she noticed a similar nodule on the inner aspect of her right elbow. The latter grew slowly. Examination revealed the presence of a large hard tumor on the outer aspect of the left elbow very similar in appearance to the one seen on the patient's previous admission. A new tumor was not found at the site of the former operation on the right elbow but a small hard mass was present at the level of the ulnar groove below the medial epicondyle. There were no neurologic signs in the distribution of the ulnar nerve.

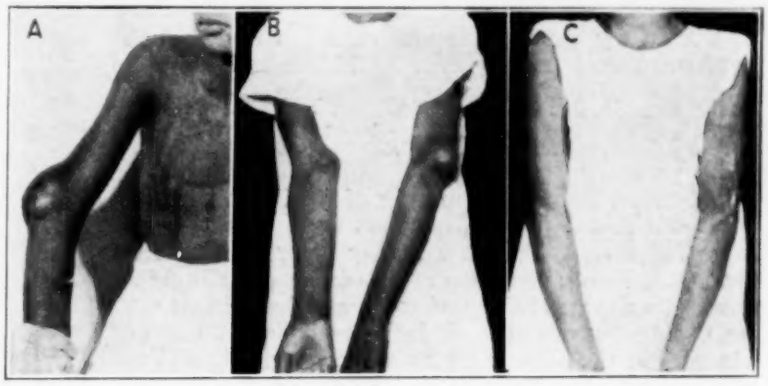

Fig. 9 (case 3).—*A*, tumor of right elbow. *B*, location of the new tumor of the left elbow and the aspect of the right elbow eight months after operation. *C*, appearance following excision of tumors of both elbows.

Laboratory work on admission showed erythrocytes 4,720,000, hemoglobin 65 per cent, leukocytes 13,000, lymphocytes 30 per cent, monocytes 2 per cent, neutrophils 68 per cent and eosinophils 0. The cholesterol was 225 mg., phosphorus 4.8 mg., calcium 9 mg. and phosphatase 3.7 mg. per hundred cubic centimeters.

The patient was given a course of a substance [1] which I have found successful in hastening reabsorption of calcified deposits in bursitis, without any effect.

On March 13 I operated on the right elbow, finding a tumor which was identical grossly with the one removed at the previous operation. The ulnar nerve was included in, though not compressed by, the temporal mass and had to be dissected out carefully. The postoperative course was uneventful. The patient then received a second course of the substance [1] and high voltage roentgen therapy to the tumor of the left elbow without noticeable improvement. The tumor was then removed surgically on April 20. It was found deep to the triceps tendon and appeared to arise from the subtricipital bursa. No new tumors have appeared during the month of observation since her last operation. Her blood cholesterol on May 16 was 268 mg. Her general condition is perfect.

COMMENT

As I have said before, it is difficult to name and classify the clinical entity which I have just described and illustrated. Undoubtedly it is an atypical calcinosis which does not correspond to the types described by Steinitz and others,[2] namely all calcinosis

1. Robes' Anti-Rheumatic Injections, marketed by Robes' Intravenous Products, Inc., called in Cuba Patogenol Gardier. It is stated to contain mercury bichloride 0.9 mg., "guaiacum solids" 0.3 mg. and sodium chloride 0.0066 Gm. per hundred cubic centimeters of 8 per cent alcohol (J. A. M. A. **86:** 1713 [May 29] 1926).

2. Steinitz, H.: Calcinosis circumscripta ("Kalkgicht") und Calcinosis universalis, Ergebn. d. inn. Med. u. Kinderh. **39:** 216, 1931. Lutz, J. Fletcher: Calcinosis Universalis, Ann. Int. Med. **14:** 1270 (Jan.) 1941. Rothstein and Welt.[6]

circumscripta and calcinosis universalis. It is not similar either to Virchow's [3] metastatic calcinosis. However, the microscopic aspect of the calcareous deposits and their chemistry do resemble those of the different forms of calcinosis which have been described. Geschickter and Lewis,[4] studying tumors of the bursae, present 1 case in which the microscopic appearance is similar to that in my cases. A similar condition is described by Adrian as being reported by Milian and Neveu.[5] This occurred in a woman aged 39, and the lesion was in the prepatellar bursa. Microscopically, the authors could find no tumor tissue and termed the condition calcareous granuloma.

Characteristics which may be of significance in my cases are that 2 of the 3 patients were female; all 3 were Negroes; there was a history of preceding traumatism in 1 case; there was a lack of symptom pain in 2 cases; there was absence of other calcifications in the skin, subcutaneous tissues, fascia and viscera and of changes in the skin, such as scleroderma; there was absolute articular integrity with no deformities, rigidities, contractures or disturbances in the gait; normal circulation and normal blood calcium and phosphorus were present; there was absence of localized or systemic infection; parasites were not found; the serologic reactions were negative; there were no tuberculous lesions and no skeletal deformities in the skull and thorax.

Only 1 case showed an increase in blood cholesterol, and it is to be regretted that more detailed specialized studies of the fat, calcium and phosphorus metabolisms could not be carried out.

I am of the opinion that my cases cannot be grouped under any of the conventional types of abnormal calcification such as myositis ossificans, metastatic calcinosis, calcinosis universalis and calcinosis circumscripta,

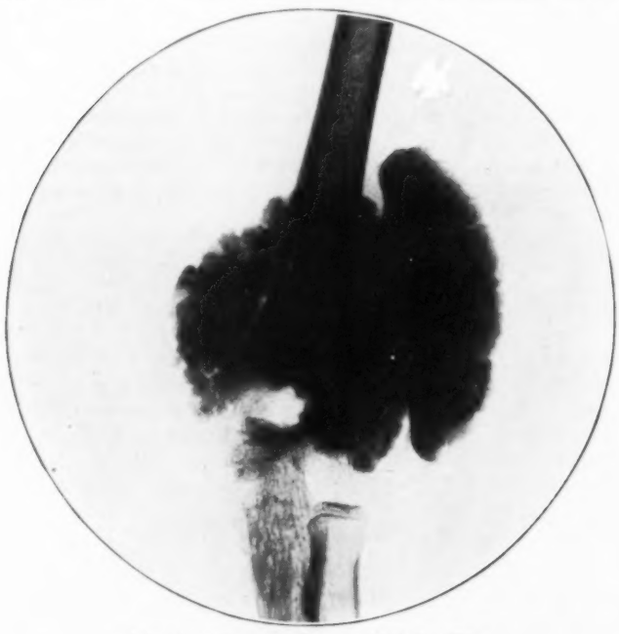

Fig. 10 (case 3).—Tumor of right elbow.

which have already been described, for they differ from these clinically, roentgenologically and pathologically. Thirty-seven cases of calcinosis universalis reported in the literature by various authors bear no resemblance to my cases as to symptoms, course and roentgen aspects. The predominating characteristics of my cases are the sign "tumor," the gigantic and progressive nature of the calcification, the spread of the growth beyond the muscular and bursal structures and the anatomic distribution to regions in which bursae and gliding cellular tissue are present.

Fig. 11 (case 3).—Tumor of right elbow.

One cannot say with certainty whether the process begins in the bursae and spreads to the muscle or whether the reverse is true. However, in favor of the first hypothesis there is the fact that these tumors have always been found in regions in which bursae are commonly present.

The pathogenesis of this condition remains obscure, the explanations given by various investigators for the pathogenesis of calcinosis universalis and calcinosis circumscripta being in my opinion open to criticism.

The treatment in my cases has been surgical resection of the tumor, followed in 1 case by high voltage roentgen therapy. Owing to the local character of the lesion, I have not tried any of the methods of treatment advocated for calcinosis universalis.

According to Rothstein and Welt [6] there is no specific treatment of calcinosis, medical treatment such as with solution of parathyroid, acetylcholine, insulin and pilocarpine as well as physical therapy, heliotherapy, roentgen therapy and even surgery being of little avail. Brooks, Craig and Lyall have used disodium hydrogen phosphate to mobilize calcium and increase its excretion, but this treatment has failed in the hands of Rothstein and Jacobowitz. Kennedy uses a ketogenic diet rich in fats, basing the rationale of his treatment on the observations of Frölich and Nelson that such a diet delays the union of fractures, but he has been unable to obtain good results. In other hands this treatment has also failed. Recently Ramsdell published the results obtained on a patient operated on more than a year before and presented 3 more patients with a syndrome of calcinosis treated by hemithyroidectomy and parathyroidectomy, with great improvement. The cases were typical of calcinosis universalis.

3. Virchow, Rudolf: Ueber Kalkmetastasen, Virchows, Arch. f. path. Anat. **8**: 103, 1855.

4. Geschickter, C. F., and Lewis, Dean: Tumors of Tendon Sheaths, Joints and Bursae, Am. J. Cancer **22**: 96 (Sept.) 1934.

5. Milian and Neveu: Bull. et mém. Soc. Anat. de Paris **2**: 827, 1900.

6. Rothstein, Jacob, and Welt, Sara: Calcinosis Universalis and Calcinosis Circumscripta in Infancy and Childhood, Am. J. Dis. Child. **52**: 368 (Aug.) 1936.

CONCLUSIONS

I have presented 3 cases of calcareous granuloma or tumoral calcinosis, not having found in the literature reports of any cases equal to these clinically, roentgenologically or pathologically.

All 3 tumors occurred in the Negro race, which may be mere coincidence, owing to the limited number of cases seen.

In all 3 I found characteristically the presence of a calcified tumor, with rapid and gigantic growth, which apparently arose from a bursa and subsequently invaded the surrounding muscle.

Resection and high voltage therapy have arrested, limited or cured the lesion.

I have failed to determine the etiology of this interesting pathologic entity in the cases studied.

Manrique 208.

ABSTRACT OF DISCUSSION

DR. ROBERT SCHROCK, Omaha: This exhaustive study leaves us without suggestion as to what further might be done. The interesting feature is the close comparison which Dr. Inclan and his collaborators brought out of this calcium material to the material that is practically always seen in calcinosis universalis; also their tie-up from an anatomic location to the regions where bursae normally are. I think they have come close to giving us an explanation of this through the tumors apparently originating in the bursae, then invaginating, as they emerge through the bursal sac, invading the surrounding tissue to this tremendous deposition of material, which apparently in all 3 cases is exactly similar. We are most appreciative of Dr. Inclan's report.

DR. RALPH K. GHORMLEY, Rochester, Minn.: I had a case that is almost identical with Dr. Inclan's second case and his third one. A boy aged 14 years came to the clinic six years ago. His immediate complaint was of a large tumor on one buttock which looked on the photograph to be almost identical to the lesion in the first or second of Dr. Inclan's photographs. The roentgenogram showed a large, multilocular mass. We removed the tumor, which was a subgluteal bursa. It was multilocular. Many of the sacs were filled with a thick, heavy, calcified mass, almost pasty. Some of the sacs had thin fluid. Some of the fluid was slightly discolored; some of it was lemon colored and almost clear. The fluid was reported to contain mainly calcium phosphate. The boy had had another lesion on one elbow which had been excised by his home physician before we saw him. He went home and in a couple of years came back with another one on the opposite buttock. We went through the same procedure. These tumors weighed in the neighborhood of 4,000 Gm. at the time of their removal. Later the boy came back for a research study and stayed with us for six weeks, during which time his calcium balance was studied by our chemists, who concluded that his calcium balance was normal. Nor did the roentgenologic studies show any evidence of decalcification of the bones, although we estimated that he had lost an enormous amount of calcium during the months we had him under observation. This boy had two sisters who had identical lesions. We found a similar case reported in a French journal of pathology in 1898. I believe this case was identical to ours, and in this case too there was a familial history; two or three members of the same family had the condition. I don't know what the condition is, any more than Dr. Inclan does. I believe the lesions are bursae with an unusual tendency to calcify. In our case there was an interlying unusual deposit of lipoid in the cells at the base of the bursa. This may or may not have had any significance. In our case too, since the last tumor was removed, we have been able to keep the boy from any recurrence by giving him small doses of sodium citrate, which procedure was suggested to us by a member of the medical staff.

DR. ALBERTO INCLAN, Havana, Cuba: I appreciate the contribution of the discussers. I am not sure that these tumors come only from bursae, as the situation of 2 of these tumors was in places where there are no bursae. That is, I haven't found any bursae described in those locations in the anatomic textbooks. I refer to the localization on the internal aspect of the elbow and the one in the sacral region, this coming from the areolar connective tissue underneath the tendon at origin of the latissimus dorsi. These are the only places where we could be sure that these tumors arose, but there are no bursae anatomically known in those two places. On one of the microscopic sections shown we see the calcifications actually infiltrating the muscle fibers, suggesting that if the tumor arose from a bursa, it certainly did not remain confined to its place of origin. These are the reasons why I hesitate in calling this tumor calcareous granuloma of the bursa or, as is suggested, to call it bursal calcinosis. In reference to Dr. Ghormley's case, in none of my cases has a familial tendency been present.

PRIMARY LYMPHOID TUMORS OF THE RECTUM RESEMBLING INTERNAL HEMORRHOIDS

REPORT OF THREE CASES

CAPTAIN TOM E. SMITH
MEDICAL CORPS, ARMY OF THE UNITED STATES

Owing to the fact that no report of a primary lymphoid tumor of the rectum resembling internal hemorrhoids could be found in the literature, it was deemed advisable to present 3 cases of rectal lymphoid tumors resembling internal hemorrhoids which occurred in my practice between January and June 1941.

There are numerous cases of primary rectal lymphoid tumors reported in the literature, but these cases have occurred in the rectal ampulla and not in the anal canal.

N. D. Smith [1] of the Mayo Clinic reported 1 case of lymphosarcoma in the anal canal, but he made no mention of this tumor clinically resembling an internal hemorrhoid.

Kallet [2] of Detroit reported a myosarcoma of the rectum resembling an internal hemorrhoid, and this was the only report found in the literature in which a sarcoma was reported as clinically resembling an internal hemorrhoid. It is only natural to assume that if the muscle tissue of the anal canal could become sarcomatous it would likewise be possible for the lymphoid tissue to become sarcomatous.

In my series of three primary lymphoid tumors there were 1 case of lymphosarcoma and 2 cases of benign lymphomas.

The term lymphoma is used because it signifies a benign condition. Other terms have been used in the literature as synonyms, such as benign lymphoid hyperplasia, giant cell lymphoblastoma, and lymphadenoma.

There is much confusion regarding the nomenclature of lymphoid tumors as pointed out in an article by Hayes, Burr and Pruit.[3] I have no desire to enter into this report the numerous arguments for different pathologic terms because of the possibility of increasing confusion. The reader is referred to the article by these authors for a classic discussion of the numerous terms and the arguments advanced by the proponents for the adoption of the several terms.

From the Department of Proctology, Baylor University College of Medicine, Dallas, Texas.

Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this aritcle.

Read before the Section on Gastro-Enterology and Proctology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

1. Smith, N. D.: Lymphosarcoma of the Rectum and Sigmoid, Tr. Am. Proct. Soc. **34**: 160, 1933.
2. Kallet, H. I., and Saltzstein, H. C.: Sarcoma, Melanoma and Leukosarcoma of the Rectum, Tr. Am. Proct. Soc. **33**: 75, 1932.
3. Hayes, Herbert; Burr, H., and Pruit, L. T.: Lymphoid Tumors of the Colon and Rectum, Tr. Am. Proct. Soc. **40**: 214, 1939.

REPORT OF CASES

CASE 1.—Mrs. T. L., aged 42, was seen on Jan. 6, 1941 in consultation because of rectal protrusion. The protrusion had been present for "several months," so the patient stated, and on detailed questioning she said that the protrusion had been noticed for a period of from two to three months. There was inconvenience caused by the protrusion, but the patient stated that there was no anorectal pain, bleeding, discharge or itching. The patient referred to the rectal protrusion as the "piles."

Inspection, palpation and endoscopy revealed what was clinically diagnosed "second degree hemorrhoids." There was slight induration in the left lateral area, so it was thought that thrombosis was present. The right anterior and right posterior internal hemorrhoids were not unusual.

A hemorrhoidectomy was performed at St. Paul's Hospital on January 8 and the tissue was sent to the hospital pathologist according to hospital routine for tissue examination.

The pathologist Dr. Jack Goforth reported "hemorrhoids" and "rectal lymphosarcoma, grade IV, radiosensitive" (figs. 1 and 2).

After numerous consultations and a complete roentgen study by Dr. Glenn Carlson, no other foci of lymphosarcoma could

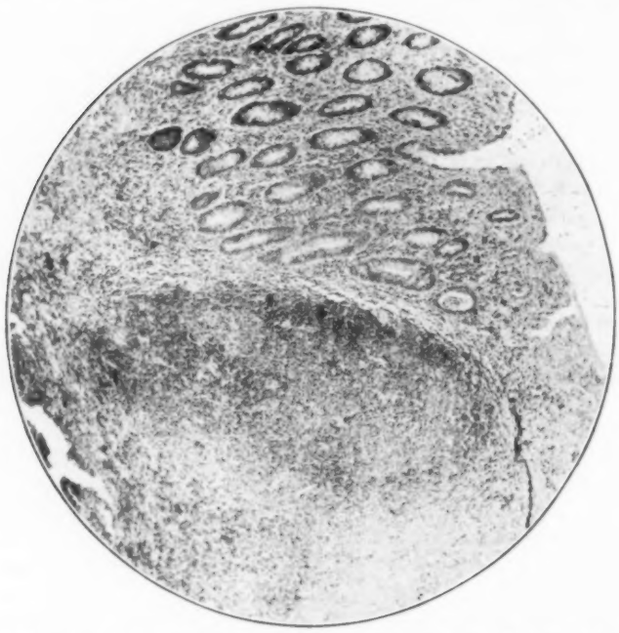

Fig. 1 (case 1).—Lymphosarcoma of the rectum. Section shows lymphoid tissue below the mucous membrane of the internal hemorrhoidal zone.

be found and it was agreed that the tumor was primary in the rectum. A series of twenty-four roentgen treatments were then given by Dr. Carlson over a period of twenty-four days.

The convalescence was uneventful except for mild radiation sickness. All wounds were healed in forty-five days.

The patient was seen at monthly intervals for one year and twice in the last six months. Inspection and anorectal endoscopy were negative for recurrence at each examination.

The inguinal lymphatics were negative at the onset and have remained so to date.

CASE 2.—Mrs. D. B., aged 36, was seen in consultation on May 6, 1941 for pain in the rectum, protrusion from the rectum and blood streaks on the toilet tissue following defecation. The symptom of protrusion was noticed from two to three months before consultation; however, the patient stated that she had been "constipated" all her life. Pain following defecation of moderate severity and streaking of blood on the toilet tissue had been noticed for two months. Anorectal inspection, palpation and endoscopy revealed (1) an ulcer in the posterior part of the anal region with hypertrophic anal papilla and (2) second degree internal hemorrhoids with thrombosis in the right posterior internal hemorrhoid.

Hemorrhoidectomy, anal ulcerectomy and papillectomy were done one week later, on May 13, at Baylor University Hospital, and the patient had an uneventful recovery. She left the hospital in five days and all wounds were healed in forty-five days.

Tissue examination was done and the pathologist Dr. J. M. Hill reported (1) hyperplasia of submucosal lymphoid tissue in

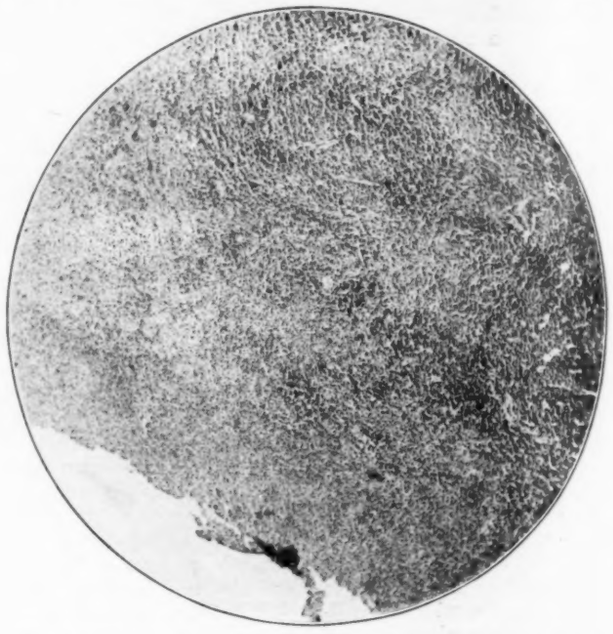

Fig. 2 (case 1).—Lymphosarcoma of the rectum. Lymphoid tissue is devoid of germinal centers, and lymphoblasts predominate.

the wall of the rectum, (2) hemorrhoids and (3) anal ulcer and hypertrophic anal papilla (fig. 3).

Check-up examinations were done monthly for one year, with no evidence of lymphoid tumor regeneration. The patient has repeatedly stated that she was free from anorectal symptoms.

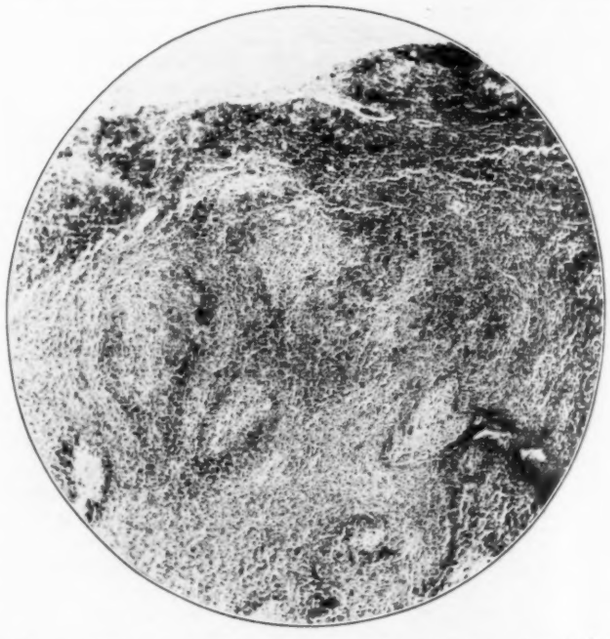

Fig. 3 (case 2).—Lymphoma of the rectum. Section shows benign hyperplasia of the lymphoid tissue. Germinal centers are present.

CASE 3.—Mr. P. C., aged 21, was seen in December 1940 because of rectal bleeding and protrusions. Both symptoms had been present for six months and the bleeding was at this time intermittent and not as great in amount as it had been in the beginning. The bleeding was always bright red.

Anorectal examination revealed second degree internal hemorrhoids with thrombosis in the left lateral hemorrhoid.

Owing to the fact that the patient was a college student it was suggested that he wait until the summer recess of 1941 to have a hemorrhoidectomy.

Hemorrhoidectomy was performed on June 6, 1941 at Baylor University Hospital, and the tissue was sent for pathologic examination in compliance with the hospital's routine.

The pathologist reported "hemorrhoids" and "hyperplasia of submucosal lymphoid tissue in the wall of the rectum" (fig. 4).

Hospitalization lasted five days, and the wounds were healed in thirty days.

Follow-up examinations were done at three month intervals for almost a year without evidence of recurrence of a lymphoid tumor.

COMMENT

Roentgen therapy was not given in the last 2 cases since the tumors were benign and tissue healing in both was normal, with no tendency toward recurrence.

It is interesting that each case was clinically diagnosed as hemorrhoids because there were no other changes visible or palpable to stimulate one to think of any other lesion. While it is true that induration

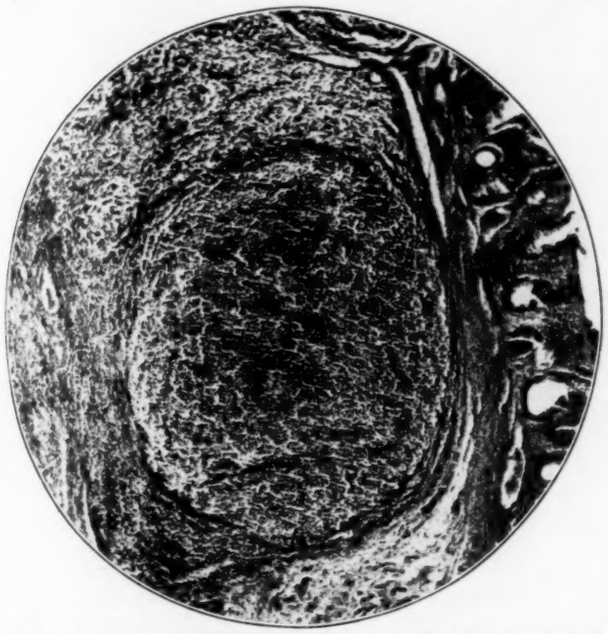

Fig. 4 (case 3).—Lymphoma of the rectum. Benign hyperplasia is shown in the germinal center of the internal hemorrhoidal zone below the mucous membrane.

to palpation was present, the zones were freely movable by the examining finger, and on endoscopy the maroonish purple look of internal hemorrhoids was present and, in fact, hemorrhoids were present in each case as proved by microscopic examination.

In an analysis of the 3 cases it will be noted that in each there was one hemorrhoidal zone with enough induration to provoke thinking of thrombosis in the internal hemorrhoidal zone. Thrombosis is occasionally seen in one or more of the three cardinal hemorrhoidal areas and is the usual cause of induration to the palpating finger in that zone.

From these cases it would seem necessary to remember that, while thrombosis is the usual cause of induration in the internal hemorrhoidal zones, all indurated internal hemorrhoids should be saved for microscopic examination of the tissue.

The primary purpose of reporting these cases was to make an appeal for histopathologic examination of all excised anorectal tissue, since all of these cases were diagnosed correctly from tissue study when the clinical preoperative diagnosis did not allow for the lymphoid changes present.

Correct tissue diagnosis of lymphosarcoma in case 1 led to early roentgen therapy and will deserve credit for the patient's life if she continues to live and not have lymphosarcomatous recurrence. Had this specimen been thrown away it is possible that without the aid of roentgen therapy she probably would not have had the close follow-up examinations, and the process might have become extensive before she presented herself again.

In the other 2 cases correct tissue diagnosis has put all on guard and check-up examinations will be made at regular intervals with the use of roentgen therapy immediately should either or both show lymphoid tissue regeneration.

SUMMARY AND CONCLUSIONS

1. Because no cases of primary rectal lymphoid tumors resembling internal hemorrhoids could be found in the literature 3 such cases are here reported.

2. All surgically removed anorectal tissue regardless of the clinical diagnosis should be studied microscopically.

3. Early, sufficient roentgen therapy was given a patient with primary rectal lymphosarcoma of the anal canal following surgical excision, and clinically good results were proved by the test of time for one and one-half years.

ABSTRACT OF DISCUSSION

DR. CURTICE ROSSER, Dallas, Texas: This paper emphasizes particularly the constant necessity for careful microscopic examination of all tissue removed from the anorectum. Proctologists are in accord concerning the possibility of malignant degeneration or tuberculosis in inflammatory processes such as fistulas and ulcers. The possibility of specific tissue reaction in connection with hemorrhoids is not so well understood, however, and in some institutions there is a tendency to object to the routine examination of removed hemorrhoidal tissue. Dr. Hirschman has reported the discovery of a colloid carcinoma in an internal hemorrhoid, and I have reported 4 instances of malignant degeneration of hemorrhoidal tissue. Dr. Smith's cases concern lymphoid deposits in the hemorrhoidal zone, which require careful microscopic study to differentiate them from internal hemorrhoids. The various malignant and benign lymphoid tumors found in the rectum are remarkable primarily because of the variation in gross structure and appearance, which means that the cooperation of the pathologist is always an essential in the final diagnosis. There is no agreement at this time as to the proper management of lymphoid intestinal tumors. Apparently, however, irradiation is advisable if the cells appear to be radiosensitive; otherwise surgical removal is probably indicated.

DR. SIMON B. KLEINER, New Haven, Conn.: I want to add another case of lymphosarcoma of anal origin, which was reported by me at the American Proctologic Society in 1938. No doubt the reason Dr. Smith didn't find this in the literature is that at the time I reported my case I emphasized the fact that it had to be differentiated from lymphogranuloma venereum because of the stricture and overgrowth of tissue around the anus, and also because the patient was a Negro. The man had been referred to me after he had had a hemorrhoidectomy. Pathologic examination showed lymphosarcoma, but on account of the other factors I continued further studies on him at the rectal clinic of the Yale Medical School. There we made Frei tests, which were negative, and we did a biopsy of the inguinal nodes, which showed lymphosarcoma. He was referred to our tumor clinic and was given roentgen therapy. He did well and continued his work as a laborer but died about four years later of pneumonia. The question of lymphosarcoma, not of the anal region but of the rectum, is presented by Bensaude in a paper which he published about fifteen years ago. He reported about 20 cases and showed some beautiful color plates; however, as Dr. Smith brought out, these cases were not lymphosarcoma of the anal region but lymphosarcoma of the rectum.

DR. CLAUDE C. TUCKER, Wichita, Kan.: In 1938 Dr. C. A. Hellwig and I presented a paper before this section entitled "Proctologic Tumors," which was published in THE JOURNAL. At that time we laid emphasis on the pathologic examination of all tissue removed at the time of the operation. For the past twelve years we have sent all our tissues to the laboratory. We stated that many of the malignant tumors in our material were small and that 18 of the 52 malignant tumors were discovered during routine microscopic examination of what seemed clinically harmless lesions. In 6 of the malignant cases, cancer developed in previously existing anal lesions: 1 adenocarcinoma in a fistulous tract, 1 squamous cell carcinoma in a fissure, 3 adenocarcinomas in hemorrhoids and 1 basal cell carcinoma in external hemorrhoids. Since the publication of our paper we have had 3 cases of lymphosarcoma of the rectum which had their origin in the anal canal and were not suspected of malignancy. I feel that all tissue surgically removed should be reexamined.

CAPT. TOM E. SMITH, M. C., A. U. S.: I have read Dr. Kleiner's article in the 1938 Transactions of the American Proctologic Society and, if my memory serves me correctly, he did not refer to his case of lymphosarcoma as resembling an internal hemorrhoid. I have found no record in the literature of a cancer such as that reported here looking exactly like a benign lesion. There are numerous cases of rectal lymphosarcoma reported which were found by proctoscopic examination and digital palpation, but these stimulated thinking of malignancy. I wish to make a plea that anorectal tissue be sent to the pathologist even though on the surface it looks as though it should be thrown away.

THE TREATMENT OF EXPERIMENTAL SHOCK FROM REPEATED HEMORRHAGE

A PRELIMINARY REPORT ON THE USE OF PURE AMINO ACIDS AND OF HYDROLYZED PROTEIN

ROBERT ELMAN, M.D.
AND
CARL E. LISCHER, M.D.
ST. LOUIS

The amino acids of hydrolyzed protein have been shown in previous studies [1] from this laboratory and clinic to be effective in promoting the synthesis of serum albumin and in various types of hypoproteinemia. Nearly all of these were instances of chronic or subacute hypoproteinemia, many of nutritional origin. In this preliminary report we present experimental evidence that the same mixture of amino acids and polypeptides is beneficial in the therapy of acute protein loss which occurs in severe uncompensated (i. e. fatal) hemorrhage. Although the value of plasma and whole blood transfusions is an established principle of vast importance in the treatment of shock, it is probable that in wartime the number requiring such treatment might well exceed the available supplies of plasma and that in the armed forces many situations might arise in which blood donors were not available. Because of the relative ease and economy with which amino acid solutions can be made, stored, transported and given intravenously, they possess obvious practical advantages.

In experiments to be described in detail at a later date, we have found that dogs (in groups of 10) subjected to repeated hemorrhage (10 cc. per kilogram every hour) show a fairly constant drop in blood pressure, many of the symptoms of shock seen in man, and a fatal outcome on the average of 3.7 hours following the beginning of the experiment. This course of events was not changed when the removed blood was replaced immediately with 10 per cent dextrose in saline solution. However, when the replacement fluid consisted of a solution containing 5 per cent hydrolyzed protein and 5 per cent dextrose, the beneficial effect was quite evident and significant. In the first place, the blood pressure was maintained at a higher level, secondly, the mean survival was over five hours or nearly 50 per cent longer, and finally the amount of blood which could be removed before death was 25 per cent greater than in the controls. The magnitude of the effect was as great as that achieved with citrated plasma. Two hydrolyzed protein solutions [2] were used, both enzymatically digested, one from beef plasma, the other from casein (Amigen); the same beneficial effect was noted with each. However, when a mixture containing all of the essential amino acids (as pure crystals) was used [3] the beneficial effect, while definite, was not as pronounced as in the case of the hydrolyzed protein. This may have been due either to known differences in amino acid composition or to the fact that the larger aggregates of amino acids (polypeptides) which comprised 30 per cent of the protein hydrolysates are more beneficial than simple amino acids. The amount of nitrogen present was the same in the two solutions.

Caution must be expressed before applying the encouraging results of these experiments to the clinical treatment of surgical shock from hemorrhage. In the first place, the present experiments, while satisfactory for the study of fatal shock due to uncomplicated loss of blood, differ in many respects from the conditions occurring in patients. Moreover, the method of fluid administration was much more rapid than the usual slow intravenous injections used clinically. In the second place the physiologic and biochemical mechanisms involved require much further investigation. We suspect, however, from a few observations, that the introduced amino acids and polypeptides are effective because they enable the liver to synthesize protein more rapidly, thus providing an added source of albumin from which to supply that lost in subsequent bleedings.

Nevertheless, further study seems justified because the practical advantages of solutions of hydrolyzed protein should make it a welcome alternative for, or a supplement to, plasma transfusions. Thus the injection of 1 liter of plasma will always require bleeding four donors and considerable processing, whereas solutions of amino acids and polypeptides are as convenient to give as dextrose and saline solution.

SUMMARY

In fatal surgical shock experimentally produced by repeated hemorrhage, immediate replacement with a solution of hydrolyzed protein containing amino acids and polypeptides exerted a definite therapeutic effect as shown by prolongation of the survival time, an increase in the amount of hemorrhage which could be sustained and a higher level of blood pressure as compared with the controls, in which dextrose alone was used or in which there was no replacement. A solution containing pure crystalline amino acids exerted a similar but less pronounced effect.

Aided by a grant from the Commonwealth Fund.

From the Department of Surgery, Washington University School of Medicine and Barnes Hospital.

1. Elman, Robert, and Weiner, D. O.: Intravenous Alimentation, J. A. M. A. **112**: 796 (March 4) 1939. Elman, Robert: Acute Protein Deficiency (Hypoproteinemia) in Surgical Shock, ibid. **120**: 1176 (Dec. 12) 1942; Parenteral Replacement of Protein with the Amino Acids of Hydrolyzed Casein, Ann. Surg. **112**: 594 (Oct.) 1940. Elman, Robert; Weiner, D. O., and Bradley, Eugenie: Intravenous Injections of Amino Acids (Hydrolyzed Casein) in Postoperative Patients, ibid. **115**: 1160 (June) 1942.

2. Supplied through the courtesy of Dr. Warren M. Cox Jr. of Mead Johnson & Company, Evansville, Ind.

3. Supplied through the courtesy of Dr. D. F. Robertson, Merck and Company, Rahway, N. J.

EFFECT OF DIETHYLSTILBESTROL ON NEUROLOGIC SYMPTOMS OF CARCINOMA OF PROSTATE

BURDICK G. CLARKE, M.D.
AND
HENRY R. VIETS, M.D.
BOSTON

The rapid reduction of obstruction of the urethra by carcinomatous tissue in the prostate gland, when patients are treated by the estrogen diethylstilbestrol,[1] as reported by Kahle and Maltry,[2] Herbst,[3] Kahle, Ogden and Getzoff,[4] Heckel and Kretschmer,[5] Wishard[6] and Chute and Willetts,[7] has led to an investigation of a similar "unblocking" phenomenon in the release of cerebrospinal fluid when obstructed by metastases secondary to prostatic carcinoma. Metastatic lesions in the lumbosacral spine, causing pain in the legs from direct pressure on nerve roots or invasion of the spinal canal causing blockage of the cerebrospinal fluid and traction on the roots, are commonly discovered on roentgen examination and lumbar puncture in patients with prostatic cancer. The relief of these symptoms may be of more urgent concern than the urinary dysfunction, and thus the patient's chief complaint is "neuritis" or "rheumatism" rather than urinary retention. The history of a case of this type is here set forth, with notes on the rapid amelioration of the symptoms following the use of diethylstilbestrol.

REPORT OF CASE

History.—W. C. F. K., a married man aged 69, American, a carpenter who had worked at his trade until six weeks before admission, was admitted to the Neurological Service of the Massachusetts General Hospital May 5, 1942 because of difficulty in walking and pain in his legs of six to eight weeks' duration. The pain, which did not have segmental distribution, was intensified by walking, coughing or straining. There were no symptoms of prostatic obstruction.

Physical Examination.—The patient was well developed. He could not move about briskly in bed because of pain in his legs and back. When asked to walk, he did so with a slow, deliberate gait. In all acts he guarded the lumbar spine, in which no motion appeared. There was tenderness over the spinous processes of the first three lumbar vertebrae. Coughing, straining, flexion of the head on the chest or of the thighs on the abdomen all accentuated the pain, suggesting that it might be due to a process involving the nerve roots in the lumbar region. The knee jerks and ankle jerks were not obtained, but no sensory changes, paralysis or atrophy were noted.

By rectal examination a hard, enlarged prostate gland was palpated. The tone of the rectal sphincter was normal. Roentgen examination showed osteoplastic metastases involving the first three lumbar vertebrae. A study of the cerebrospinal fluid pressures and dynamics showed almost complete "block" of the spinal canal between needles inserted between the twelfth thoracic and first lumbar and the fifth lumbar and sacrum. The fluid obtained from the second locus was yellow, with a protein content of 798 mg. per hundred cubic centimeters. Atypical cells, thought by the pathologist to be malignant, were aspirated from the epidural space between the third and fourth lumbar vertebrae.

Laboratory Reports.—The serum acid phosphatase was 4.4 and 4.5 Gutman units on two determinations, the upper limits of normal being regarded as 4. Serum alkaline phosphatase was 7.8 Bodansky units, the normal range being considered as 3 to 5. The serum phosphorus was 3.9 and 4 mg. per hundred cubic centimeters on two determinations. The daily urinary excretion of 17-ketosteroids was on two occasions estimated as 10.4 and 7.3 mg., within the normal amount for elderly men without prostatic disease. The red blood cell count was 5,250,000 per cubic millimeter of blood and the hemoglobin 14.4 Gm. per hundred cubic centimeters (Sahli). The white blood cell count, the differential count and the urine were within the limits of normal and the Hinton test on the blood and the Wassermann test on the cerebrospinal fluid were negative.

Treatment.—A course of twelve intramuscular injections of 10 mg. daily of diethylstilbestrol in oil was begun sixteen days after admission. The patient felt better within twelve hours, was walking about the ward without pain in four days and regarded himself as well eight days after treatment was started. Twelve days after his first treatment the dynamics of the cerebrospinal fluid were normal and the protein was greatly reduced in amount. He was discharged from the hospital on the thirteenth day of treatment with orders to take diethylstilbestrol 6 mg. daily by mouth.

Cerebrospinal Fluid Findings Before and After Treatment with Diethylstilbestrol of Spinal Metastatic Carcinoma Originating in the Prostate Gland

	Before Treatment		12th Day of Treatment		77th Day of Treatment	
	T12/L1	L5/8	T12/L1	L5/8	T12/L1	L5/8
Color	Clear	Yellow	Clear	Yellow	Clear	Clear
Initial pressure in mm. of water	120	70	120	105	200	150
Respiration and pulse oscillations	Good	Fair	Good	Good	Good	Good
Rise on jugular compression, bilaterally, in mm. of water	300	170	250	250	300	250
Flow	Rapid	Slow	Rapid	Rapid	Rapid	Rapid
Protein in mg./100 cc.	91	798	108	167	43	52

Subsequent Course.—Three weeks after discharge, while he was still taking 6 mg. of diethylstilbestrol daily, firm, pitting edema of the lower legs and ankles developed. On examination it was noted that both testes had become atrophic and some hypertrophy and tenderness of subcutaneous breast tissue had developed. The dosage of diethylstilbestrol was reduced to 3 mg. a day, by mouth, and the patient, free of pain, returned to his work.

On August 6, seventy-seven days after the treatment was started, he was readmitted to the hospital for study, having received a total of 120 mg. of diethylstilbestrol intramuscularly and 231 mg. orally. He felt well and had a good appetite, and his weight had increased from 158 to 162 pounds (71.7 to 73.5 Kg.). He reported that he could do twice as much work as his 40 year old partner. No personality changes were noted. He had lost his libido. The prostate gland had become soft, smooth and half its previous size. Edema of the ankles and mild gynecomastia persisted. Knee jerks and ankle jerks were now easily obtained. There was no tenderness or guarding of the lumbar spine on walking or pain on coughing or on flexion of the neck or thighs. Lumbar puncture showed complete disappearance of the cerebrospinal fluid "block," with the protein values at the twelfth thoracic and first lumbar and the fifth lumbar and sacrum not significantly elevated (as shown in the accompanying table).

The urinary output of 17-ketosteroids had dropped to 2.2 mg. a day; the serum acid phosphatase was 6.4 Gutman units, alkaline phosphatase 6.2 Bodansky units and serum phosphorus 3.2 mg. per hundred cubic centimeters. The urine, white blood cell count and differential count remained normal, but the

From the Neurological Service, Massachusetts General Hospital.

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2. Kahle, P. J., and Maltry, Emile: Treatment of Hyperplasia of the Prostate with Diethylstilbestrol and Diethylstilbestrol Dipropionate, New Orleans M. & S. J. **93:** 121-131 (Sept.) 1940.
3. Herbst, W. P.: The Effects of Estradiol Dipropionate and Diethylstilbestrol on Malignant Prostatic Tissue, Tr. Am. A. Genito-Urin. Surgeons **34:** 195-202, 1941.
4. Kahle, P. J.; Ogden, H. D., Jr., and Getzoff, P. L.: The Effect of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland: Clinical Observations, J. Urol. **48:** 83-98 (July) 1942.
5. Heckel, N. J., and Kretschmer, H. L.: Carcinoma of the Prostate Treated with Diethylstilbestrol, J. A. M. A. **119:** 1087 (Aug. 1) 1942.
6. Wishard, W. N., Jr.: The Clinical Use of Stilbestrol in the Treatment of Carcinoma of the Prostate, Indiana Univ. M. Center Quart. Bull. **4:** 5-9 (Jan.) 1942.
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red blood cell count had dropped to 3,780,000 per cubic millimeter of blood and the hemoglobin to 11.9 Gm. per hundred cubic centimeters (Sahli).

Roentgen examination showed no definite change in the metastases in the lumbar vertebrae. A study of a specimen obtained from a needle biopsy of the prostate gland disclosed malignant tissue, although comparative histologic evidence of regressive changes under treatment could not be definitely established, since the needle biopsy before treatment had failed to yield prostatic tissue.

The patient continued to take diethylstilbestrol by mouth for seventy-seven days, remaining free from symptoms during this period. Three months later, however, symptoms returned with pain in the lumbar region and in the legs, made worse by coughing or sneezing. His gait became unsteady and weak. On examination Dec. 4, 1942 the condition was not dissimilar to that found previous to diethylstilbestrol treatment. The cerebrospinal fluid "block," however, was even more pronounced than it had been before, the total protein in the lower needle being 750 mg. per hundred cubic centimeters. Bilateral orchiectomy was done and in five days the patient was completely relieved of his symptoms. An examination of the cerebrospinal fluid two weeks after operation showed that the "block" had completely disappeared, the total protein being 80 mg. per hundred cubic centimeters.

A subsequent note giving more details of the later treatment of this patient will be forthcoming. In the meantime we may contrast the rapidity and completeness of the relief of the cerebrospinal fluid "block" by diethylstilbestrol and by operation. The operation of bilateral orchiectomy appears to have removed a more severe block in quicker time than the treatment with diethylstilbestrol.

COMMENT

Adult prostatic epithelium, whether normal, hyperplastic or malignant, is known to undergo regression of activity and atrophy when the androgenic substances are greatly reduced in amount, either by castration or by inactivation through the administration of estrogens such as diethylstilbestrol.[8] Kahle and Maltry[2] treated 14 patients with prostatic hyperplasia with diethylstilbestrol and noted a consistent decrease in the size of the gland. Similar results in a series of cases of carcinoma of the prostate are reported by Kahle, Ogden and Getzoff,[4] whose patients were also examined for histologic evidence of regressive changes by Schenken, Burns and Kahle.[6] Comparative changes have also been shown by Heckel and Kretschmer.[5] Chute and Willetts[7] give the actual measurements, by the use of proctocystograms, of the prostate gland before and after treatment with diethylstilbestrol, showing a reduction in size.

In addition to the reduction in size of the gland, the secondary lesions of bone metastases are also affected. Huggins, Stevens and Hodges[8] demonstrated by serial roentgenograms increased density of bone metastases in patients under treatment by castration. Kahle, Ogden and Getzoff[4] observed less consistent changes in serial roentgenograms as well as definite regression of lymph node metastases in 2 patients treated with diethylstilbestrol.

That the serum acid phosphatase level is usually elevated in carcinoma of the prostate with metastases has been shown by Robinson and the Gutmans[9] as well as by Herger and Sauer.[10] Huggins and Hodges[11] observed a sharp decrease in serum acid phosphatase in 5 patients treated with estrogens as well as in 6 out of 8 patients after orchiectomy. In 3 patients given injections of the androgen testosterone dipropionate after orchiectomy, pain recurred and the serum acid phosphatase levels rose. In our case, contrary to the usual findings, the serum acid phosphatase increased after treatment from 4.4 to 6.4 Gutman units.

Satterthwaite, Hill and Packard,[12] who have treated 10 patients by castration, with relief of symptoms, have noted that the urinary output of 17-ketosteroids in patients suffering from prostatic carcinoma, with or without metastases, is within normal limits for elderly men but falls significantly after operation, as it did in our case after treatment with diethylstilbestrol.

A number of side effects have been reported in the treatment of cancer of the prostate with diethylstilbestrol, or by castration, which include hypertrophy of breast tissue, testicular atrophy and the loss of libido and the power of ejaculation. In patients treated by castration loss of sexual capacity, hot flashes and temporary edema of the ankles have also been observed.

Possibly of significance is a reduction in the number of red blood corpuscles and the amount of hemoglobin in the blood. Our patient showed a decrease from 5,250,000 red blood corpuscles per cubic millimeter to 3,780,000 per cubic millimeter and a loss of hemoglobin from 14.4 Gm. per hundred cubic centimeters to 11.9 Gm. per hundred cubic centimeters. No definite statement can be made at the present time as to whether this change resulted from the carcinoma itself or from the treatment.

Before diethylstilbestrol was used, in the case reported, there was almost a complete "block" in the cerebrospinal fluid between the two needles inserted in the lumbar spine at the levels below the twelfth thoracic vertebra and the fifth lumbar vertebra. The fluid showed the characteristics of Froin's syndrome, with a yellow color, a total protein content of 798 mg. per hundred cubic centimeters and a partial response to rise after jugular compression in the lower needle. Subsequent to the taking of diethylstilbestrol by injection and by mouth, the cerebrospinal fluid "block" disappeared, as shown by the establishment of normal color, the return of the dynamics on jugular compression to normal and the reduction of the protein to 52 mg. per hundred cubic centimeters. The evidence is clear that the treatment with diethylstilbestrol actually reduced the compressing element in the spinal canal which acted particularly as a means of blocking the pathway of the cerebrospinal fluid. The use of this estrogenic substance, therefore, served to release the "block," and presumably this was the principal factor in relieving the symptoms of pain and difficulty in walking. Prior to treatment the patient was worse in the upright position or when coughing or straining. Subsequently none of these maneuvers caused pain. After leaving the hospital, the patient was able to carry on a usual day's work as a carpenter without a recurrence of his symptoms.

8. Huggins, Charles; Stevens, R. E., Jr., and Hodges, Clarence V.: Studies on Prostatic Cancer: II. The Effects of Castration on Advanced Carcinoma of the Prostate Gland, Arch. Surg. **43**: 209-223 (Aug.) 1941. Higgins, C. C., and Gosse, C. L.: The Present Status of Castration for Carcinoma of the Prostate, Cleveland Clin. Quart. **9**: 80-86 (April) 1942. Schenken, J. R.; Burns, E. L., and Kahle, P. J.: The Effect of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of the Prostate Gland: II. Cytologic Changes Following Treatment, J. Urol. **48**: 99-112 (July) 1942.

9. Robinson, J. N.; Gutman, E. B., and Gutman, A. B.: Clinical Significance of Increased Serum "Acid" Phosphatase in Patients with Bone Metastases Secondary to Prostate Carcinoma, J. Urol. **42**: 602-618 (Oct.) 1939.

10. Herger, C. C., and Sauer, H. R.: Relationship of Serum Acid Phosphatase Determination to Presence of Bone Metastases from Carcinoma of Prostate, J. Urol. **46**: 286-302 (Aug.) 1941.

11. Huggins, Charles, and Hodges, Clarence V.: Studies on Prostatic Cancer: I. The Effect of Castration, of Estrogen and of Androgen Injection on Serum Phosphatases in Metastatic Carcinoma of the Prostate, Cancer Research **1**: 293-297 (April) 1941.

12. Satterthwaite, R. W.; Hill, J. H., and Packard, E. F.: Experimental and Clinical Evidence on the Role of the 17 Keto-Steroids in Prostatic Carcinoma, J. Urol. **46**: 1149-1153 (Dec.) 1941.

Huggins, Stevens and Hodges [6] reported a case, with similar symptoms to ours, responding favorably to orchiectomy: A man aged 71 had abdominal and low back pain, numbness over the buttocks and posterior part of the thighs as well as urinary and fecal incontinence. The deep reflexes in the legs were absent. The cerebrospinal fluid was yellow, with an increase in protein content. Roentgen rays disclosed extensive osteoplastic metastases. Within three days after bilateral orchiectomy, the patient was relieved of pain and in seven weeks continence was restored, a decubitus had healed and the cerebrospinal fluid had become clear. Details of the fluid are not given, but the evidence points to a release of "block," as in our case, by orchiectomy, without the use of diethylstilbestrol.

CONCLUSIONS

A patient with carcinomatous metastases from the prostate causing a "block" in the pathway of the cerebrospinal fluid and pain from pressure or traction on the spinal nerve roots was relieved by treatment with diethylstilbestrol. The response was rapid and remarkably complete. The release of the "block" was demonstrated by serial lumbar punctures at appropriate levels, as well as by the relief of pain and the return of the knee jerks and ankle jerks.

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THE EFFECTS OF ASCORBIC ACID IN RELATION TO LEAD ABSORPTION

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CINCINNATI

The experimental observations described in the following paragraphs were prompted by the reports of Holmes and his associates [1] on the beneficial effects of the administration of ascorbic acid to persons suffering from chronic lead poisoning. These investigators noted a decided reduction in the symptoms of exposed workmen and an apparent decrease in the lead content of the blood and the urine following the daily ingestion of ascorbic acid. This was associated with an increase in the number of erythrocytes, a decrease in the number of stippled erythrocytes and an increase in the hemoglobin content of the blood. They inferred that ascorbic acid combined with lead to form a relatively insoluble or unionized compound that might be eliminated through the bile into the feces.

The importance of these conclusions, from a practical point of view, stimulated our efforts to verify them. If they proved to be true in our hands, it would be feasible to supply the necessary ascorbic acid in convenient form as a prophylactic measure, in addition to the procedures concerned with the control of the lead exposure.

While our work was in progress, other experimental studies, as well as case reports, have appeared in evidence of widespread interest in this subject. Dannenberg, Widerman and Friedman [2] have described an unsuccessful attempt to treat a case of lead poisoning with ascorbic acid. Pillemer and his colleagues [3] have reported that animals poisoned with lead do not respond favorably to ascorbic acid therapy. However, these investigators as well as Betti [4] carried out experiments on animals the results of which clearly indicate that ascorbic acid protects animals against the toxic effects of lead absorption, although it is not quite clear whether any specific benefit is conferred beyond that incident to the prevention of a deficiency of the vitamin. Marchmont-Robinson [5] has reported his observations on a group of workmen exposed to lead and has concluded that the administration of ascorbic acid is beneficial in terms of reduction of toxic symptoms but that it is without significant effect on the urinary lead excretion. Neither conclusion appears to have been fully substantiated by adequate control data.

METHODS OF STUDY

Selection and Classification of Exposed Workmen.—An ideal group of four hundred men was available for study in a plant for the manufacture of tetraethyl lead. Since this organic lead compound is dangerously volatile at ordinary temperatures and is also susceptible of absorption through the skin, every precaution is taken to control the manufacturing processes against leakage or escaping vapor. In addition, general and locally applied ventilation is employed to maintain the lead concentration in the air within safe limits.

At intervals of three weeks, each man receives a special examination, the nature of which is indicated by the accompanying record form. Laboratory work includes a determination of the hemoglobin by the Haden-Hausser method at each examination. At every fourth examination (twelve week intervals) a complete blood study is made, including enumeration of the erythrocytes, stippled erythrocytes and leukocytes, a differential leukocyte count and a determination of the hemoglobin. At this time also a clinical urinalysis is made. If any suggestive signs or symptoms exist, specimens of urine, feces or blood or all three are sent to the Kettering Laboratory of Applied Physiology (University of Cincinnati College of Medicine) for determination of the lead content. When suggestive evidence of early toxic effects exists, the man's work is changed. By early toxic effects we do not mean lead colic, neuritis or encephalitis but rather unexplained fatigue, headache, slight loss of weight, insomnia, indigestion, constipation, anorexia, mental excitement, dreams, hemoglobin under 75 per cent, red count under 4,200,000 or increase in numbers of stippled erythrocytes. Frequently a change in diastolic blood pressure to 60 or lower which persists from week to week is the earliest physiologic sign of toxic effect.

In addition to the special examination, each man receives annually a complete physical examination, which includes a roentgenogram of the chest.

As an additional check on the lead exposure, a group of seventy-two representative workmen is studied

From the Medical Department of the Dye Works, E. I. DuPont de Nemours & Co. (Drs. Evans and Norwood), and the Kettering Laboratory of Applied Physiology, University of Cincinnati College of Medicine.

1. Holmes, Harry N.; Amberg, Edward J., and Campbell, Kathryn: Vitamin C Treatment in Lead Poisoning, Science **89:** 322-323 (April 7) 1939. Holmes, Harry N.; Campbell, Kathryn, and Amberg, Edward J.: The Effect of Vitamin C on Lead Poisoning, J. Lab. & Clin. Med. **24:** 1119-1127 (Aug.) 1939.

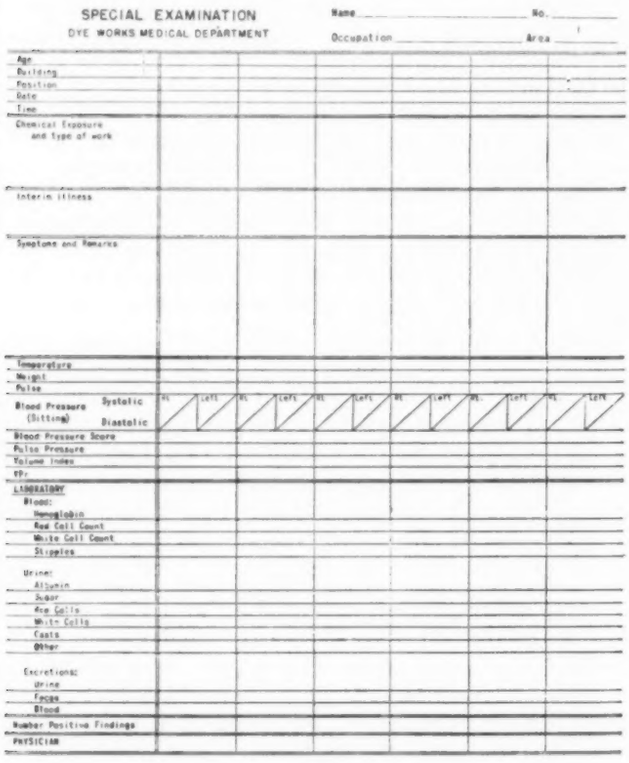
2. Dannenberg, Arthur M.; Widerman, Arnold H., and Friedman, Paul S.: Ascorbic Acid in the Treatment of Chronic Lead Poisoning: Report of a Case of Clinical Failure, J. A. M. A. **114:** 1439-1440 (April 13) 1940.

3. Pillemer, L.; Seifter, Joseph; Kuehn, A. O., and Ecker, E. E.: Vitamin C in Chronic Lead Poisoning, Am. J. M. Sc. **200:** 322-327 (Sept.) 1940.

4. Betti, C.: The Action of Ascorbic Acid and the Cortical Hormone on Experimental Lead Intoxication, Gazz. San., 1940, no. 2; abstr. Rass. M. Industr. **11:** 485, 1940.

5. Marchmont-Robinson, S. W.: Effect of Vitamin C on Workers Exposed to Lead Dust, J. Lab. & Clin. Med. **26:** 1478-1481 (June) 1941.

at quarterly intervals to determine the level of lead excretion in feces and urine. A single bowel movement is taken to represent the usual twenty-four hour elimination and is analyzed in its entirety. The specimen of urine is a half gallon or more, collected while away from the plant. (These analyses are also made at the


SPECIAL EXAMINATION
DYE WORKS MEDICAL DEPARTMENT
Name ____ No. ____
Occupation ____ Area ____

Age
Building
Position
Date
Time
Chemical Exposure and type of work
Interim illness
Symptoms and Remarks
Temperature
Weight
Pulse
Blood Pressure (Sitting) Systolic / Diastolic
Blood Pressure Score
Pulse Pressure
Volume Index
PP
LABORATORY
Blood:
Hemoglobin
Red Cell Count
White Cell Count
Stippling
Urine:
Albumin
Sugar
Red Cells
White Cells
Casts
Other
Excretions:
Urine
Feces
Blood
Number Positive Findings
PHYSICIAN

Record form.

Kettering Laboratory of Applied Physiology.) This group is sampled to represent every type of occupation and exposure. It is made up of the operators of furnaces, autoclaves and stills, the handlers of alloy, the blenders, laboratory workers and supervisors.

These methods of medical control, together with continuous air sampling and analyses, have been used for years. It was felt that the seventy-two men whose excretions had been checked quarterly for years, presented an ideal group for testing the effect of ascorbic acid.

Half of this group (thirty-six men) were given 100 mg. of ascorbic acid daily by mouth for one year. The other half of the group (thirty-six men) represented a control group and received no medication. The exposure of the two groups was practically identical, as equal numbers performed each type of work. The examinations made during previous years have shown that the excretions of lead of the two groups are approximately the same and there has been little difference in the general health as indicated by the lost time due to sickness. The number of symptoms and signs which might be referable to early toxic effects of lead were approximately equal for the two groups.

The average age for the group given ascorbic acid was 37.3 years, while that of the control group was 36.0 years. The average number of years employed in lead work was 9.3 years in the ascorbic acid group and 8.1 years in the control group.

With the aforementioned conditions existing it was felt that the groups were large enough and selected with sufficient care so that they were alike in every respect except that one group received 100 mg. of ascorbic acid daily while the other group did not.

Preliminary Observations on Ascorbic Acid Nutrition.—Before giving ascorbic acid to the group of lead workers, studies were made to determine the state of vitamin C nutrition in this group as compared with other workers doing similar types of manual work but not exposed to lead.

Using the phenol-indophenol titration method for determining ascorbic acid, twenty-four hour urinary excretion and saturation tests were run on lead workers and controls. The methods used are outlined in detail in The Vitamins.[6]

Our findings in thirty-one lead workers and fifteen controls are shown in table 1, in which the generally accepted value of 20 mg. of ascorbic acid in twenty-four hours is taken as the minimal normal level.

Saturation tests as recommended by Kajdi[7] were done on ten lead workers and five controls. These results also are given in table 1.

From the foregoing it may be seen that a high percentage of the workers studied were deficient in ascorbic acid nutrition and that the lead workers were somewhat more deficient than the others.

Collection and Examination of Data.—Data on symptomatology and on physical and laboratory findings specifically related to lead in the two equally exposed groups were collected and examined by identical methods. The plant hospital is located close to the tetraethyl lead plant and workers find it very easy to drop in to make requests for treatment of a variety of minor complaints. Therefore the dispensary records were of considerable help in checking complaints which were not always admitted at the time of the regular examinations.

TABLE 1.—*Comparison of Workmen Exposed to Lead with Unexposed Workmen with Respect to Ascorbic Acid Nutrition*

	Lead Workers		Other Workers	
Fasting plasma ascorbic acid values in mg. per 100 cc.	No.	%	No.	%
Normal, 0.7 or more	2	20	3	60
Intermediate subnormal, 0.4-0.69	4	40	1	20
Subnormal, less than 0.4	4	40	1	20
Total	10	100	5	100
Vitamin C index: Fasting plasma ascorbic × increase 5 hours after injection × 100				
Normal? above 10	7	70	5	100
Intermediate subnormal, 6-10	2	20	0	0
Subnormal, 6-8	1	10	0	0
Total	10	100	5	100
Five hour urinary excretion following intravenous injection of 1,000 mg. ascorbic acid				
Normal, 400 mg. or more	3	27	3	60
Subnormal, less than 400 mg.	8	73	2	40
Total	11	100	5	100
Twenty-four hour urinary excretion of ascorbic acid, mg.				
Normal, 20 mg. or more	11	36	7	47
Subnormal, less than 20 mg.	20	64	8	53
Total	31	100	15	100

6. The Vitamins: A Symposium Arranged Under the Auspices of the Council on Pharmacy and Chemistry and the Council on Foods of the American Medical Association, Chicago, American Medical Association, 1939.

7. Kajdi, Laslo; Light, Jacob, and Kajdi, Charlotte: Test for the Determination of Vitamin C Storage. Vitamin C index, J. Pediat. **15**: 197-218 (Aug.) 1939.

On a large sheet, every complaint and every illness resulting in loss of time during the year, together with the length of time lost, were listed for each man. The results of quarterly urine and fecal lead analyses were listed for the year of the experiment and for the previous year when neither group was receiving ascorbic acid. Lead analyses on the blood of the men, carried out before and during the administration of ascorbic acid to the test group, were tabulated on the same sheet. All abnormal urinary findings were noted. All leukocyte counts above 10,000 and all erythrocyte counts below 4,300,000 were recorded, as were hemoglobin determinations below 75 per cent and stippled erythrocyte counts in excess of 10 per hundred thousand (fifty fields).

During the past few years, workers at the Haskell Laboratory of Industrial Toxicology in Wilmington, Del., under the direction of Dr. John H. Foulger, have made extensive studies of blood pressure and pulse changes. In brief, they have found that diastolic blood pressure readings greater than 93 or less than 65, pulse pressure greater than 58 or less than 30 and pulse rates greater than 89 or less than 61 are definitely abnormal. All circulatory abnormalities fitting these criteria and occurring during the year among the men of the two groups were tabulated on the large sheets.

TABLE 2.—*Lead Concentration in Blood of Group Not Taking Ascorbic Acid and Group Taking Ascorbic Acid During the Year Prior to and During the Administration of Ascorbic Acid*

Lead in Mg. per 100 Gm. of Whole Blood	Frequencies of Occurrences of Concentrations Indicated			
	Workmen Not Taking Ascorbic Acid		Workmen Taking Ascorbic Acid	
	1939	1940	1939	1940
0-0.009	..	..	..	..
0.01	..	..	..	..
0.02	1	2	1	1
0.03	10	7	4	12
0.04	11	8	11	6
0.05	1	4	3	3
0.06	1	4	2	3
0.07	1	..	3	..
0.08	..	..	1	..
Total	25	25	25	25
Mean and probable error	0.043 ± 0.001	0.046 ± 0.001	0.051 ± 0.002	0.043 ± 0.001
Standard deviation	±0.012	±0.012	±0.015	±0.011

EXPERIMENTAL RESULTS

The large charts of assembled data are not shown for lack of space, but a series of smaller tables present the essential data and compare the thirty-six men taking ascorbic acid to the thirty-six controls with respect to the excretion of lead in urine and feces, the concentration of lead in the whole blood, the microscopic blood findings, the circulatory abnormalities and the early complaints that may conceivably be related to mild toxic effects of lead absorption.

Table 2 shows the results of the analyses of the blood. The data on both groups, as presented here, apply only to persons on whom results were obtained both in 1939 and in 1940. A scattering of unpaired figures resulting from failure to obtain blood samples at the right time and from the loss of a few samples in transit had to be discarded. There is only one set of results that shows any noteworthy divergence from the others. From the statistical point of view this difference between the mean value for the test group during the period of administration of ascorbic acid and that for any of the other sets of results is not quite four times its own probable error and is not certainly significant. In physiologic terms the difference is so slight as to be of little or no consequence, regardless of its statistical interpretation. If any doubt could be entertained on this score, it would be dispelled by the data on the urinary lead concentration as recorded in tables 3 and 4. Previous experience has demonstrated clearly that changes in the availability of lead within the body have a proportionally greater effect on the urinary lead concentration than on the lead concentration in the blood.

TABLE 3.—*Urinary Lead Concentration of Group Not Taking Ascorbic Acid During the Years 1939 and 1940*

Lead in Mg. per Liter	Frequencies of Occurrence of the Concentrations Indicated	
	In 1939	In 1940
0-0.029	1	1
0.03	21	26
0.06	27	42
0.09	39	29
0.12	21	20
0.15	7	11
0.18	4	9
0.21	3	1
0.24	..	2
0.27	..	..
0.30	1	2
0.33	1	1
Totals	116	144
Mean and probable error	0.096 ± 0.003	0.107 ± 0.003
Standard deviation	±0.051	±0.057

The results obtained on the samples of urine were first listed for the individual quarters in which the samples were obtained. The dates of sampling were the same for the test and the control group and were also approximately the same for the two years represented. The distribution of the results was generally similar for the respective quarters throughout the years, and therefore, for purposes of comparison, they were combined for each year, as seen in tables 3 and 4. Samples were lacking for some of the individual subjects during one or more quarters in 1939, and therefore there was a smaller total number of results for 1939.

TABLE 4.—*Urinary Lead Concentration of Group Taking Ascorbic Acid During the Year (1939) Prior to Taking It and During the Year in Which It Was Taken*

Lead in Mg. per Liter	Frequencies of Occurrence of the Concentrations Indicated	
	In 1939	In 1940
0-0.029	1	..
0.03	17	20
0.06	35	47
0.09	36	39
0.12	23	15
0.15	9	15
0.18	2	5
0.21	4	1
0.24	1	1
0.27	1	..
0.30	..	..
0.33-0.359	..	1
Totals	139	144
Mean and probable error	0.105 ± 0.004	0.103 ± 0.003
Standard deviation	±0.050	±0.059

There is no reason for supposing that this fact could influence the general spread or any other characteristic of the data as a whole. It is obvious that no significant change occurred in the urinary lead concentration either as between the control and test group or between the years 1939 and 1940.

TABLE 5.—*Fecal Lead Concentration of Group Not Taking Ascorbic Acid During the Years 1939 and 1940*

Lead in Mg. per Gm. Ash	Frequencies of Occurrence of the Concentrations Indicated: In 1939	In 1940
0-0.119	46	48
0.12	53	68
0.24	10	18
0.36	4	5
0.48	..	2
0.60	1	1
0.72	..	..
0.84	..	..
0.96	1	2
1.08	..	..
1.20	..	..
1.32-1.439	1	..
Totals	116	144
Mean and probable error	0.173 ± 0.011	0.183 ± 0.008
Standard deviation	±0.172	±0.148

Any differences which might occur in the fecal lead content or concentration from quarter to quarter, from year to year or from one group to another would have to be interpreted with great caution in view of the overwhelming predominance of ingested lead over excreted lead in determining the extent of the fecal lead elimination. Nevertheless the fecal results, expressed in terms of the quantity of lead per gram of fecal ash, have been tabulated in tables 5 and 6. The most cursory examination of the results demonstrates the similarity of the groups throughout the period involved, in this respect.

TABLE 6.—*Fecal Lead Concentration of Group Taking Ascorbic Acid During the Year (1939) Prior to Taking It and During the Year in Which It Was Taken*

Lead in Mg. per Gm. Ash	Frequencies of Occurrence of the Concentrations Indicated: In 1939	In 1940
0-0.119	47	49
0.12	64	70
0.24	13	19
0.36	2	2
0.48	1	1
0.60	..	1
0.72	..	..
0.84	..	..
0.96	1	1
1.08	..	..
1.20-1.319	..	1
Totals	128	144
Mean and probable error	0.161 ± 0.008	0.188 ± 0.007
Standard deviation	±0.121	±0.142

Table 7 gives the pertinent clinical data and the general findings of the clinical laboratory for the two groups. No significant difference can be seen in the numbers of erythrocytes or of stippled erythrocytes, or in the hemoglobin content of the blood. Likewise the number of abnormal circulatory findings was approximately the same in the two groups. There was little difference in the number or severity of the complaints that could be referred to possible lead effects. These complaints were grouped under the main headings of gastroenteric tract symptoms, constipation, headache, nervousness, fatigue and rheumatic pains. The gain in weight differed insignificantly. It was surprising to find no difference in the two groups in the matter of symptoms, since in checking the men who took ascorbic acid, twenty-one of the thirty-six, or 58 per cent, reported some improvement such as less fatigue, more regular bowel movements, improvement in appetite and sleeping. However, verbal reports were similar in a large group of lead workers being given all the vitamins except ascorbic acid. As may be seen from table 7, there were more of the ascorbic acid group who lost time due to sickness than in the control group, and the total time lost was greater.

CONCLUSIONS

Ascorbic acid nutrition in workers in a large plant was found to be generally poor and somewhat poorer in lead workers than in others.

TABLE 7.—*Clinical Findings on 36 Men Taking 100 Grams of Ascorbic Acid Daily for a Year, Compared with Clinical Findings on 36 Men Not Taking Ascorbic Acid*

	Group Taking Ascorbic Acid: Number	Per Cent	Control Group: Number	Per Cent
Abnormal blood pressure	20	56	23	64
Abnormal pulse pressure	10	28	8	22
Abnormal pulse rate	20	56	19	53
Low red blood counts	12	33	10	28
Low hemoglobin	10	28	8	22
High count of stippled erythrocytes	11	31	11	31
Weight increase	20	56	19	53
Net average gain in pounds	1.6		0.5	
Gastroenteric complaints	15	42	12	33
Constipation	12	33	13	36
Headache	9	25	11	31
Nervous complaints	3	8	3	8
Fatigue and rheumatic pains	12	33	7	19
Lost time illness	15	42	12	33
Lost time	432 days		236 days	

Careful study of a large group of lead workers failed to reveal any effect of ascorbic acid taken orally in daily quantities of 100 mg. on the lead concentration in the blood or on the elimination of lead in the feces or urine.

No difference was noted in the physical condition of the men or in the number and severity of complaints. No change was found in the numbers of erythrocytes or stippled erythrocytes or in the hemoglobin in the blood.

No reason has been found for recommending the use of ascorbic acid to minimize the effects of lead absorption.

The Movement Westward.—When our forefathers were sick they faced the necessity not only of overcoming their diseases virtually unaided but also of withstanding the treatment that was designed to cure them. Only the sturdy survived. Those who lived to carry on the race possessed a physical fiber that was both tough and resilient—a constitutional endowment that they needed when the movement westward began. Although historians tell us that the pioneers climbed mountains, waded through swamps, swam rivers, endured extremes of heat and cold, suffered from thirst and hunger on the plains, and fought the hostile Indians because of the lure of gold or the promise of new and more fertile lands, it is also possible that they left the East to escape their doctors.—Irving, Frederick C.: Safe Deliverance, Boston, Houghton Mifflin Company, 1942.

Clinical Notes, Suggestions and New Instruments

TREATMENT OF EPILEPTIFORM ATTACKS CAUSED BY CALCIFIED ADRENALS

WILLIAM LINTZ, M.D., BROOKLYN

History.—I. P. S. F., a boy aged 11 years, when seen in 1937, gave the history of having suffered from epilepsy since he was 2½ years old. The convulsions first came on shortly after an ordinary attack of measles suffered at that time. For a few years they were very frequent but gradually diminished in number until they averaged only two to three attacks a month. These convulsions were not preceded by an aura. An upset stomach or an oral temperature of 100 F. or more, from whatever cause, was very sure to bring on an attack. No individual article of diet, condition of the bowels or nervous strain was responsible for these convulsions. They began spontaneously, like lightning from a clear blue sky, apparently without cause, as on one occasion when, after spending a prolonged afternoon at the movies, he ran a block to his car only to be seized by a violent convulsion in front of it.

These convulsions did not begin in any special part of the body. They were general, with practically every muscle participating. They were clonic in character, lasting from one to five minutes, during which time there was complete loss of consciousness. There was no foaming at the mouth and no biting of the tongue. There was no loss of strength of the sphincters. At the end of an attack the patient gradually regained consciousness without having the slightest recollection of the convulsion. He not infrequently vomited and felt "lousy" for the rest of the day. The attack was not followed by confusion, drowsiness or sleep. These attacks occurred equally day and night and during his sleep.

The boy had a brilliant mind. At 11 he already had been graduated from elementary school. He was highly intelligent, possessed an unusual fund of knowledge and had an excellent memory. I found him good natured, kind and lovable. He tired very easily and could not participate in strenuous games. When he was 3 or 4 years old it was impossible for him to walk ten blocks. Even at 11 he had to be in bed by 7 and certainly never later than 9 o'clock. His legs would give out. He petered out toward the end of a game. He had a tendency to constipation.

A tonsillectomy was performed and the patient had pneumonia at 1; an attack of measles was followed by an obscure illness and then by these convulsions at 2½ years of age. An appendectomy performed later on gave no relief from these attacks. There was a definite history of allergy on the mother's side and of diabetes on the father's side.

Physical Examination.—The boy weighed 89 pounds (40.4 Kg.), was 58½ inches (149 cm.) tall and had a blood pressure of 88 systolic and 75 diastolic. His body was covered with numerous supernumerary adrenal spots—those brown-black spots from which Coopman was able to extract epinephrine. The blood count was normal and urinalysis gave negative results.

Results of Sugar Tolerance Test

Sugar tolerance test—100 Gm. of dextrose used		Urine Sugar
Fasting	85.7 mg. per 100 cc. of blood	Negative
1 hour	85.7 mg. per 100 cc. of blood	Negative
2 hours	85.7 mg. per 100 cc. of blood	Negative
3 hours	85.7 mg. per 100 cc. of blood	Negative
4 hours	85.7 mg. per 100 cc. of blood	Negative

Treatment.—In the past he had been on all sorts of diets and had been given all sorts of enemas, and all his life he had been taking daily 2 grains (0.13 Gm.) of phenobarbital. I placed him on a high calcium diet especially rich in vitamin B, eliminated certain foods to which by cutaneous test and by history he was found to be allergic and substituted 3 to 4½ grains (0.2 to 0.3 Gm.) of phenytoin sodium for the phenobarbital. His convulsions were unabated.

I next saw the patient two years later, when he was 13 years of age and at the end of the second year in high school. As usual, he was at the head of his class.

In view of the utter lack, with the exception of the convulsions, of all stigmas of long standing epilepsy—mental deterioration, aura, lingual injury and loss of sphincter control—and an absent family history of epilepsy, in spite of the previous diagnosis of epilepsy made by many colleagues of unusual reputation in this field, I decided to restudy the case.

I asked the patient to keep a diary and I was struck by the tremendous spontaneous intake of sweets—ice cream, candy, sodas, puddings and honey.

Many blood examinations were made; typical findings are as follows: Hemoglobin 75 per cent, red blood cells 3,770,000,

Arrows point to calcified adrenals. The previous atonic and redundant large intestine became normal after vitamin B therapy.

white blood cells 8,350, polymorphonuclear leukocytes 69 per cent, small lymphocytes 18 per cent, large lymphocytes and transitionals 10 per cent and eosinophils 3 per cent. Macrocytes and poikilocytes were present. The results of the sugar tolerance test are given in the accompanying table.

The basal metabolic rate varied between minus 2 and minus 12.

A gastric analysis, in which crackers and water were used, gave negative results as the result of physical and chemical examination of 260 cc. of stomach contents extracted after forty-five minutes. The feces were normal.

Examination.—Fluoroscopy of the chest showed a very small heart—drop heart; otherwise everything was normal.

A gastrointestinal series of roentgenograms was completely negative. On previous investigations atony and redundancy of the large intestine had been found. I find that the administration of large doses of vitamin B restores such bowels to normal. Pancreatic studies proved negative.

These roentgenograms showed what was of paramount importance—complete calcification of both adrenal glands.

The peculiar sugar tolerance reaction and the completely calcified adrenals changed the entire aspect of the condition. For the first time there was a lucid and logical explanation

Read before the Manhattan Roentgen Ray Society, Oct. 6, 1942.

of all the symptoms. The diagnosis of epilepsy was abandoned. The obscure illness after the attack of measles which was followed by these attacks of convulsions was evidently caused by tuberculosis of both adrenal glands with their subsequent calcification. For tuberculosis to follow measles is by no means a rare occurrence.

While I was unable to do a blood sugar determination during a convulsion, it is evident from the sugar tolerance tests that he was unable to mobilize dextrose when he most needed it. That hypoglycemia will produce convulsions is too well known for discussion. In fact, it is the basis for treatment of certain mental diseases.

The disturbed physiology of the adrenals explains the patient's symptoms. If one bears in mind what epinephrine does, it is evident that all his symptoms are explained by his calcified adrenals.

Epinephrine stimulates the conversion of glycogen in the liver, and possibly in the muscles, into dextrose, which is then poured into the circulating blood. The level of the blood sugar rises, and if it exceeds the renal threshold some sugar will be excreted into the urine. If the liver has previously been emptied of the glycogen, it is stated that a rise in the blood sugar level may still result from epinephrine.

Epinephrine performs the following functions:

1. It aids the redistribution of the blood in the body and increases the force and rate of the heart. A large dose of epinephrine may cause the minute output of the heart to increase by 90 per cent, partly by an increase of rate and partly through an increased output per beat. It thus enables the heart to cope better with a larger venous return.

2. It mobilizes liver glycogen and provides sugar for the active tissues.

3. It diminishes fatigue in the skeletal muscles. This is an important action. The muscles work to better advantage because of the increased supply. It constricts the vessels of the skin, but the vessels supplying the skeletal muscles dilate. In addition, it has been stated that epinephrine increases the force of contraction both of normal and of fatigued muscles in response to stimulation through its motor nerve.

4. It possibly increases the red blood cell count and thus the oxygen carrying power of the blood by stimulating the smooth muscle of the capsule of the spleen, which discharges the red blood cells stored in the interstices of the pulp.

5. It brings about relaxation of the bronchi, facilitating ventilation of the alveoli.

6. It is responsible for dilatation of the pupils and closure of the sphincters.

What better treatment is there, next to the administration of dextrose intravenously, than a shot of epinephrine for the treatment of hypoglycemia? The liver is vitally concerned with the regulation of the normal level of the blood sugar. When the blood sugar rises it stores glycogen, and it is aided in this process by insulin. When the blood sugar falls it responds in two ways: 1. It mobilizes glycogen by converting it into dextrose. It is stimulated to act in this way by impulses reaching it from the sympathetic nervous system and by the epinephrine. 2. It forms new glycogen mainly from protein and is stimulated to do this by the diabetogenic hormone.

Since normally only 5 Gm. of dextrose is present in the blood and since the sugar may be consumed suddenly and excessively, the mechanism of replacement must be very finely balanced. Yet in this patient it was grossly disturbed.

The adrenal cortex is essential to life; the medulla is not. If both adrenals are removed death results in from four to five days. Accessory cortical tissue must be present in order to survive.

I believe that the reason for the number of convulsions becoming smaller as he grew older is that he was developing accessory adrenals.

Treatment.—This was simple and effective. Instead of relying on his liver as the storage place and warehouse for his sugar, he now carries in his pocket some form of dextrose to be taken at frequent intervals.

I do not believe that this is a patient to be treated with the usual high protein, high fat diet as a patient with hypoglycemia resulting from hyperinsulinism. This condition is entirely different from such a hypoglycemia, in which by administering excessive amounts of dextrose one would further stimulate the secretion of insulin, thus increasing the hypoglycemia further by establishing this vicious cycle. He also takes adrenal cortex extract orally three times a day between meals.

RESULTS

The boy is now a brilliant student in college. He is in perfect health. In the last three years he has had two attacks—one after playing football and the other following an all night fraternity spree. In both instances he omitted taking dextrose. Under the circumstances, both attacks could have been predicted and avoided. Recently he suffered from an attack of "mushroom poisoning" which produced violent gastrointestinal symptoms but no convulsions.

I wonder whether Caesar and Napoleon, who supposedly suffered from epilepsy, did not have a similar condition. They also possessed brilliancy instead of the mental deterioration common to epilepsy of long standing.

Epileptic patients should have made not only a sugar tolerance test but x-ray studies of the pancreas and adrenal glands.

36 Plaza Street.

Special Article

STATISTICS ON THE PATIENT LOAD OF PHYSICIANS IN PRIVATE PRACTICE

ANTONIO CIOCCO, Sc.D.
AND
ISIDORE ALTMAN
BETHESDA, MD.

With the induction of thousands of physicians into the armed forces, and the resulting changes in the density, distribution and composition of physician groups, the problem of determining precisely the number of physicians required for the civilian needs of an area and the number that could be shifted from one area to another or to the armed services has become more than ever important. Any such determination requires accurate knowledge about (*a*) the number of persons who will demand medical care, (*b*) the amount of medical care they will require and (*c*) the physicians' time necessary to supply the required service. Specific knowledge on the three variables is, unfortunately, difficult to obtain. However, the integration of the three variables equals the number of patients seen by the physicians of an area in a given unit of time. Therefore, as a first approach toward a quantitative estimate of civilian needs for medical care, use can be made of data on the patient load carried by physicians. Such data have been collected for Washington, D. C., and the state of Maryland and constitute the basis of this report.

TABLE 1.—*District of Columbia Questionnaire*

The physicians were asked to state:

1. Number of patients (different individuals) seen, and visits made to or by residents of the District of Columbia last week (August 30-September 5)

	Patients	Visits
In office		
In hospital		
At patient's home		

2. Number of patients (different individuals) seen, and visits made to or by persons living outside the District of Columbia (August 30-September 5)

	Patients	Visits
In office		
In hospital		
At patient's home		

3. What is your daily routine by the clock in seeing patients in:

	Week-days	Sundays
Office		
Hospitals		
Home visits		
Hospital or public clinics		

From the Division of Public Health Methods, National Institute of Health, U. S. Public Health Service. A study carried out for the Committee on the Allocation of Medical Personnel of the Procurement and Assignment Service.

MATERIAL AND METHOD

The data on the patient load of physicians are derived from successive studies which the Procurement and Assignment Service for Physicians, Dentists and Veterinarians made in the District of Columbia and in the state of Maryland [1] in 1942, primarily to obtain information about the number and proportion of nonresident patients seen by the physicians of Washington, D. C., and of the communities of Maryland. The studies were conducted by means of questionnaires sent to all the physicians in private practice.

TABLE 2.—*Maryland Questionnaire*

The physicians were asked to state:

1. Number of patients (different individuals) seen last week (October 5-October 10):
   - A. Patients living in the county (or Baltimore City) where you practice.
     - In office ....
     - In hospital ....
     - At patient's home..... ....
   - B. Patients living in Maryland outside the county (or Baltimore City) where you practice.
     - In office ....
     - In hospital ....
     - At patient's home..... ....
   - C. Patients living outside Maryland.
     - In office ....
     - In hospital ....
     - At patient's home..... ....
2. How many hours a day do you routinely spend in your office seeing patients?

TABLE 3.—*Percentage of Practicing Physicians Who Replied to the Questionnaire from District of Columbia*

Age, Sex and Color	All Practitioners	General Practitioners	Specialists
White males			
Under 35	66	54	79
35-44	64	63	65
45-64	63	58	66
65 and over	65	68	60
All white males	64	61	66
Negro males			
Under 45	49	..	..
45 and over	41	..	..
Females			
All ages	48	..	..

The first of the studies covered the District of Columbia (table 1).

Within a week's time from the date on which the questionnaires were mailed 50 per cent of the physicians had replied, and by the time the study was closed replies had been received from 60 per cent of the practitioners.

From a preliminary analysis of the responses, it became apparent that within the week's span for which information was requested the number of visits or calls" did not exceed by any substantial amount the number of "patients." What differences existed between "visits or calls" and "patients" usually arose from the amount of services rendered in hospitals. It was also apparent that the physicians were on the whole not in a position to describe the day's routine in terms of the hours of the clock generally spent in the office or hospital or at the homes of patients. A high proportion of them frankly admitted they could not give any definite information on the point, and others simply left the question unanswered.

In view of these observations, the questionnaire was simplified in the succeeding inquiry made in Maryland (table 2).

Space for the physician's signature was left on the questionnaire and almost all the physicians duly signed the replies, generally adding helpful explanatory comments about their activities.

The number of physicians in private practice to whom the questionnaires were sent equaled 991 in the District of Columbia and 1,623 in Maryland. Replies were received from 597, or 60 per cent, of the practitioners of the District of Columbia, and 1,065, or 66 per cent, of the Maryland physicians.

The percentage of replies obtained from each age, sex and race group of the District of Columbia physicians is reported in table 3. It will be noted that among the white male practitioners replies were received from 64 per cent, while less than 50 per cent of the Negro male and of the female practitioners answered. It may be that some of the last group identified the questionnaire with the procuring of physicians for the armed services and therefore assumed that a reply was not really desired.

When the white male physicians of the District of Columbia are classified according to type of practice into general practitioners and specialists (practice limited to a specialty as indicated in the records of the Medical Society of the District of Columbia) it is found that a slightly higher percentage of specialists than of general practitioners replied. The difference is particularly noticeable in the under 35 age group, but it should not be forgotten that the numbers involved are small. On the whole, it appears that the several age groups of physicians replied in equal proportion to their number.

A tabulation of the total number of Maryland physicians according to age, sex, color and specialty for October 1942 is not available. However, a comparison can be made between the distribution of the several categories of physicians who replied and the distribution observed among those counted in a survey made in June 1942. Of the total physicians who replied, 93 per cent were white males, 4 per cent Negro males and 3 per cent white females. In June, the white males constituted 92 per cent of all practitioners and the Negroes and the females 5 and 3 per cent respectively. Among all the physicians enumerated in June, 67 per cent practiced in Baltimore City, and among the physicians who replied 65 per cent practiced in that city. In the count of Baltimore City physicians 56 per cent of the physicians were general practitioners. Of the replies to the questionnaire, 51 per cent were from general practitioners. The percentage of white male practitioners equaled 43 in the June census; it equaled 40 among the physicians who replied to the questionnaire.

TABLE 4.—*Average Weekly Patient Load of White Male General Practitioners*

Age Group	Number of Physicians Giving Information	Weekly Patient Load: Averages: Office	Hospital	Home of Patients	Total	Standard Deviations: Office	Total
Washington, D. C.							
Under 35	26	96	8	23	127	49	66
35-44	58	102	10	23	135	76	87
45-64	43	89	7	22	118	68	90
65 and over	29	40	3	15	58	40	52
All ages	156	86	8	21	115	68	84
Baltimore							
Under 35	51	102	7	27	136	62	77
35-44	77	113	9	38	160	67	92
45-64	123	67	6	30	103	58	82
65 and over	37	42	2	27	71	38	70
All ages	288	82	6	31	119	64	88
Maryland, Exclusive of Baltimore City							
Under 35	35	122	8	33	163	78	90
35-44	79	132	10	38	180	73	89
45-64	97	86	6	27	119	60	72
65 and over	51	43	3	14	60	37	46
All ages	262	96	7	29	132	71	88
Maryland (Total)							
Under 35	86	110	7	30	147	70	84
35-44	156	123	9	38	170	71	91
45-64	220	75	6	29	110	50	78
65 and over	88	43	2	19	64	37	57
All ages	550	89	7	30	126	68	88

Other comparisons between the composition of the sample of physicians who cooperated in the study and of the total number

1. Dr. F. X. McGovern, chairman of the District of Columbia Procurement and Assignment Service; Mr. Theodore Wiprud, executive secretary of the Medical Society of the District of Columbia, and Dr. C. W. Maxson, chairman of the Maryland Procurement and Assignment Service, cooperated in these studies.

enumerated four months previously also reveal only slight and insignificant differences. Therefore, it seems safe to conclude that both in the District of Columbia and in Maryland the physicians who replied to the questionnaire are on the whole fairly representative of the total physician population in the two areas, at least for the characteristics noted.

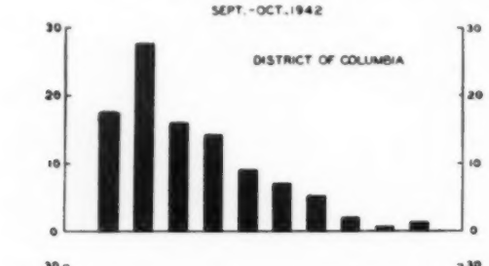


Chart 1.—Patients seen in one week by white male general practitioners, September-October 1942.

Not all of the total 1,662 replies received have been utilized for the purposes of this study. The reasons for excluding some of the schedules are several. In the District of Columbia sample, lack of internal consistency due to misunderstanding of the term "visits or calls" has been a relatively frequent cause for exclusion. In both samples the records of physicians who were absent from their practice all or part of the week have not been included. Furthermore, some of the physicians who routinely render service in clinics counted clinic load among the patients seen. Such records, when they could be identified, have also been discarded.

With reference to possible inaccuracies in the statements made by the physicians no check has been attempted, nor can any estimate be made at present of the amount or direction of any bias that may have been introduced in the replies.

WEEKLY PATIENT LOAD OF GENERAL PRACTITIONERS

In the group of general practitioners are included all the physicians except those whose practice is actually limited to a special field of medicine.[2]

The distribution of the number of patients per physician and the average weekly patient load of the physicians of the four age groups considered are shown in charts 1 and 2 and table 4. With reference to the variation among physicians, chart 1 shows that the number of patients seen in a week may range from less than 40 to more than 300. The wide dispersion is emphasized by the values of the standard deviation. These values indicate that the total patient loads of two thirds of the general practitioners, when all ages are combined, vary between 30 and 200 patients weekly, and the office patient loads vary between 20 and 150 patients. This wide range probably reflects the many varieties of activities of the general practitioner. Some services may require only a few minutes of attention while others may require several hours. Moreover, even among general practitioners there will be some whose services are preponderantly of a kind requiring either a low or a high expenditure of time per patient. It must not be forgotten either that, notwithstanding special efforts to eliminate them from the computations, there may be included a few physicians whose patient load as stated contained clinic patients. It is pertinent in this respect to note that the range and standard deviation are nearly the same for practitioners of Baltimore City, Washington, D. C., and the state of Maryland outside Baltimore City.[3]

It will be noted also that the percentage distribution of physicians in terms of weekly patient load is almost identical in Baltimore and Washington, the distribution in both instances being skewed in favor of the higher patient loads. The average weekly patient load carried by the physicians is almost the same in the two cities, 119 for Baltimore and 115 for Washington. For the Maryland counties, the more rural areas of the state, the mean patient load is 132, higher than for either of the two cities.

Among the four age groups into which the general practitioners are classified there exist differences which are especially striking because they are found in each of the three populations examined. The highest average patient load is carried by the physicians between 35 and 44 years of age. The physicians under 35 demonstrate a slightly lower average but nevertheless higher than that for the ages 45 years and above. The men 65 years and above possess the lowest patient load, less than one half of that of the men between 35 and 44 years.

The differences in the patient load carried by the four age groups of physicians are best evident for the number of patients seen in the office but are also apparent for the patients seen at the hospital and at the patient's home. With reference to these observations, it is of interest to point out that there is a positive and substantial correlation between the number of patients seen in the office and the number seen at hospitals and the homes of the patients. The coefficient of correlation of the two variables ranges from + 0.41 to + 0.66 for the four age groups of physicians in Washington, D. C., Baltimore City and the Maryland counties. The correlation would indicate that the general practitioners who have a larger office practice also have more home and hospital visits to make.

Among the Washington, D. C., general practitioners, 75 per cent of the total average weekly patient load consists of office patients. The percentage is 69 for the Baltimore City general practitioners and 73 for the general practitioners of Maryland outside of Baltimore. Thus, the Baltimore City practitioners

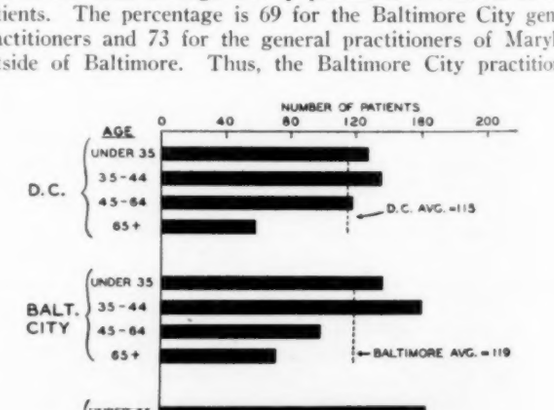


Chart 2.—Average number of patients seen in one week by white male general practitioners by different age groups.

make proportionately more home and hospital calls than do the physicians of the other two areas. The ratio of home to office calls can be used to express the same relationship. Among Baltimore City general practitioners the ratio equals 38 per cent, while among the general practitioners of Washington, D. C., and

2. For the District of Columbia sample, the records of the medical society were utilized for this information. For the Maryland sample, the information reported in the 1942 Directory of the American Medical Association was used.

3. It is necessary to point out that Baltimore City is an independent political subdivision of Maryland and is not contained in any of the twenty-three counties of the state.

of the Maryland counties it equals 24 and 30 per cent respectively. There is a tendency for this ratio to increase with age; that is, the older general practitioners make relatively more home calls than do the younger ones. In the Washington, D. C., sample, the ratio is 24 per cent for the men under 35 years of age and 38 per cent for the men 65 years and older. In the Baltimore City sample, the ratio is 26 per cent for the former and 64 per cent for the latter age group, and among the practitioners of the Maryland counties, the ratios are 27 and 33 per cent for the two age groups in the order named.

The small number of Negro male and of female physicians both Negro and white does not permit adequate comparison with respect to age and specialty. The great majority of Negro physicians are general practitioners, but the female physicians are mixed specialists and general practitioners. The pertinent data for Washington, D. C., and Baltimore are presented in table 5. From the table it is seen that Baltimore Negro physicians carry a heavier patient load than the Washington ones, and the age effect already mentioned is rather pronounced in both groups. Among the female physicians it is found that the younger practitioners have a greater patient load than the older

TABLE 5.—*Average Weekly Patient Load of Negro Male and of Female Physicians*

Age Group	Number of Physicians Giving Information	Weekly Patient Load: Averages: Office	Hospital	Home of Patients	Total	Standard Deviations: Office	Total
Negro Males—Washington, D. C.							
Under 45	24	110	9	32	151	84	96
45 and over	24	46	3	14	63	40	50
All ages	48	78	6	23	107	73	88
Negro Males—Baltimore							
Under 45	13	106	10	26	142	60	68
45 and over	16	75	6	32	113	56	76
All ages	29	88	8	30	126	60	74
Females—Washington, D. C.							
Under 45	13	65	13	13	91	41	60
45 and over	6	54	3	16	73	26	29
All ages	19	62	10	14	86	37	53
Females, Baltimore							
Under 45	6	62	16	9	87	86	91
45 and over	10	31	14	5	50	32	44
All ages	16	43	15	6	64	60	68

physicians. It is also observed that the Washington female physicians have a larger number of patients than the Baltimore ones, and both apparently carry a much lower patient load than the males.

PATIENT LOAD AND TYPE OF PRACTICE

In terms of the number of physicians involved, the major types of specialty represented by the practitioners include internal medicine, surgery, obstetrics and gynecology, pediatrics, ophthalmology and otorhinolaryngology,[4] and neurology and psychiatry. The other specialists are represented by so few physicians that their average patient loads are not discussed.

The data of table 6 reveal that all six stated groups of specialists practicing in Washington, D. C., have a slightly lower average patient load than the general practitioners. In Baltimore City, instead, it is found that the general practitioners carry a lower patient load on the average than do the pediatricians and the ophthalmologists and otorhinolaryngologists.

The differences between specialists and general practitioners relative to patient load is striking in the case of neurologists and psychiatrists, whose patient load is about one fourth that of the general practitioners. For both the Washington and the Baltimore neurologists and psychiatrists the men above 45 have a larger patient load than the men below that age. But for the remaining specialties, in general, the younger men have the greater patient load.

4. These two specialties have been combined because of the large number of eye, ear, nose and throat specialists included in these samples.

Other differences between specialists and general practitioners are observed with regard to the relationship of office calls to total calls. In particular, the ophthalmologists and otorhinolaryngologists in both cities studied see a very high proportion of their patients in the office. On the other hand, the proportion of patients seen at home by pediatricians is above the average of that of the general practitioners.

TABLE 6.—*Average Weekly Patient Load of White Male Physicians Engaged in Practice Limited to Special Fields*

Age Group	Number of Physicians Giving Information	Weekly Patient Load: Averages: Office	Hospital	Home of Patients	Total	Standard Deviations: Office	Total
Internal Medicine—Washington, D. C.							
Under 45	32	72	9	15	96	48	46
45 and over	18	69	11	12	92	65	81
All ages	50	71	10	14	95	54	61
Internal Medicine—Baltimore							
Under 45	33	51	8	12	71	39	40
45 and over	48	48	11	20	79	41	62
All ages	81	49	10	17	76	40	54
Surgery—Washington, D. C.							
Under 45	23	72	24	9	105	70	101
45 and over	14	56	15	5	76	33	42
All ages	37	66	21	8	95	59	85
Surgery—Baltimore							
Under 45	16	80	29	14	114	68	86
45 and over	39	71	26	9	106	61	75
All ages	55	74	25	11	110	63	78
Obstetrics and Gynecology—Washington, D. C.							
Under 45	22	86	19	7	112	36	44
45 and over	9	50	8	12	70	24	27
All ages	31	75	16	8	99	37	44
Obstetrics and Gynecology—Baltimore							
Under 45	17	63	14	5	82	25	28
45 and over	30	52	27	9	88	28	47
All ages	47	56	22	7	85	27	41
Pediatrics—Washington, D. C.							
Under 45	18	62	10	25	97	31	45
45 and over	9	63	10	19	92	34	40
All ages	27	62	10	23	95	32	44
Pediatrics—Baltimore							
Under 45	7	67	15	47	129	23	37
45 and over	12	42	14	52	108	28	72
All ages	19	51	15	50	116	29	62
Ophthalmology and Otorhinolaryngology—Washington, D. C.							
Under 45	23	102	8	4	114	45	46
45 and over	17	71	4	3	78	37	41
All ages	40	89	7	3	99	44	47
Ophthalmology and Otorhinolaryngology—Baltimore							
Under 45	17	103	21	2	126	69	71
45 and over	34	99	18	3	120	77	84
All ages	51	100	19	3	122	74	80
Neurology and Psychiatry—Washington, D. C.							
Under 45	5	18	1	*	19	7	6
45 and over	8	21	15	2	38	6	31
All ages	13	20	10	1	31	7	26
Neurology and Psychiatry—Baltimore							
Under 45	6	20	4	5	29	14	12
45 and over	6	19	11	4	34	9	18
All ages	12	20	7	4	31	12	15

* Less than 0.5.

The standard deviation of the patient load of specialists is, with the exception of the surgeons of both cities and of the ophthalmologists and otorhinolaryngologists in Baltimore, much smaller than that found in the case of general practitioners. This may well be due in part to the greater homogeneity of the activities of specialists in comparison with general practitioners.

PATIENT LOAD AND OFFICE WORKING TIME

Usable data on time spent in the office are available only for the Maryland physicians. The average time routinely spent in the office seeing patients each day is 5.2 hours for Baltimore general practitioners and 5.9 hours for the general practitioners of the Maryland counties (table 9). The average time differs somewhat for the several age groups, and the variation between age groups for hours in the office follows the same pattern as the variation relative to patient load (table 4). The practitioners 35-44 years old spend the highest average number of hours in the office seeing patients; the men 65 years and over spend the lowest. The men under 35 are second so far as concerns number of office working hours. Although the differences are not large, some significance can be attached to the fact that they are similar in the two samples.

The differences between the age groups not only reveal that the younger physicians have a higher patient load and spend more time in the office but also reveal that per unit of time spent in the office the younger physicians see more patients than the older. Thus, from table 9 it is seen that the younger physicians, those below 45 years of age, see in their offices about 20 patients a week for every hour daily spent in the office. This relative office patient load falls to about 9 patients weekly for every hour spent daily in the office by the men 65 years of age and over.

The relationship between the average number of patients seen in the office and the number of hours the practitioners spend in their offices is illustrated in chart 3, which deals only with the men under 65 years of age. The average number of weekly patients increases at an almost constant rate for each additional hour spent in the office. From 30 weekly office patients for the practitioners who spend two hours daily in the office, the office patient load increases to an average of 140 patients for the men who spend eight hours in the office. Each additional hour means an average increment of 18 patients weekly, or, assuming a five day week, 3.6 patients daily. From the results it can be estimated that on the average the office visit lasts seventeen minutes per individual.

In Baltimore, the general practitioners spend more time in the office than do the majority of the groups of specialists discussed. Only the ophthalmologists and otorhinolaryngologists, whose average daily office working time is 5.6 hours, spend more time in the office seeing patients than do general practitioners. The average daily office working time of the other groups is as follows: internal medicine 4.4 hours, surgery 4.4 hours, obstetrics and gynecology 3.7 hours, pediatrics 3.3 hours.

ESTIMATE OF PRESENT VOLUME OF MEDICAL CARE

The data on the patient load of physicians offer the possibility of arriving at a measure of the amount of medical services given by the physicians of a community to private patients. The product of the average weekly patient load by the total number of physicians of the community will give the number of persons who visited the physician or were visited by him during the week. If it is assumed that the physician's year is composed of fifty weeks, then the number of persons seen in one week multiplied by 50 will yield an estimate of the total number of calls or services rendered by the private practitioners in a year. The results of these computations for Baltimore City, the whole state of Maryland and Washington, D. C., are shown in table 7. An estimated total of 5,518,700 calls are made annually by the private practitioners of Baltimore and 4,864,450 by the practitioners of Washington, D. C. Thus, an average of 6.2 services per person are furnished in Baltimore and 5.9 in Washington, D. C. The services given in Maryland, outside of Baltimore City, amount to only 3.4 per person, and Maryland as a whole thus receives 4.7 physicians' services per person annually. For the two large urban centers the average number of calls per person is nearly identical but much higher than that for the more rural areas of Maryland. The increase of medical services in relation to greater urbanism was observed by Collins[5] in the material collected by the Committee on Costs of Medical Care. Collins's averages were lower than those obtained in the present sample; and the discrepancy may be due to several factors, among which are the facts that the survey by the Committee

TABLE 7.—*Estimated Annual Services Required from Private Practitioners*

Type of Practitioner	Total Annual Services			Average Annual Services per Person		
	Washington, D. C.	Baltimore	Maryland (Total)	Washington, D. C.*	Baltimore †	Maryland (Total)‡
Male white:						
General	1,771,000	3,022,600	5,926,600	2.13	3.38	3.07
Limited						
Internal medicine	475,000	353,400	410,400	0.57	0.39	0.21
Surgery	422,750	434,500	561,000	0.51	0.49	0.29
Obstetrics and gynecology	326,700	327,250	340,000	0.39	0.37	0.18
Pediatrics	190,000	284,200	330,600	0.23	0.32	0.17
Ophthalmology and otorhinolaryngology	410,850	372,100	494,100	0.50	0.42	0.26
Neurology and psychiatry	34,100	38,750	43,400	0.04	0.04	0.02
Other §	207,000	218,000	223,450	0.25	0.24	0.12
All male white practitioners	3,837,400	5,050,800	8,329,550	4.62	5.65	4.32
Negro male	786,450	359,100	504,000	0.95	0.40	0.26
Female	240,800	108,800	166,400	0.29	0.12	0.09
All practitioners	4,864,650	5,518,700	8,999,950	5.86	6.17	4.67

* Assuming a population of 830,000. † Assuming a population of 894,100. ‡ Assuming a population of 1,931,200.
§ Exclusive of radiology, industrial medicine and surgery, clinical pathology and anesthesiology.

TABLE 8.—*Percentage of Services and of Practitioners According to Type of Practice (White Male Physicians)*

Type of Practice	Washington, D. C.		Baltimore		Maryland (Total)	
	Services	Practitioners	Services	Practitioners	Services	Practitioners
General	46.2	41.4	59.8	54.5	71.2	65.6
Limited:						
Internal medicine	12.4	13.4	7.0	10.0	4.9	7.5
Surgery	11.0	12.0	8.6	8.5	6.7	7.1
Obstetrics and gynecology	8.5	8.9	6.5	8.3	4.1	5.5
Pediatrics	5.0	5.4	5.6	5.3	4.0	3.9
Ophthalmology and otorhinolaryngology	10.7	11.2	7.4	6.5	5.9	5.6
Neurology and psychiatry	0.9	3.0	0.8	2.7	0.5	1.9
Other *	5.4	4.8	4.3	4.3	2.7	2.8
All types	100.0	100.0	100.0	100.0	100.0	100.0

* Exclusive of radiology, industrial medicine and surgery, clinical pathology and anesthesiology.

5. Collins, S. D.: Frequency and Volume of Doctors' Calls Among Males and Females in 9,000 Families, Based on Nationwide Periodic Canvasses 1928-31, Pub. Health Rep. **55**: 1977-2020 (Nov. 1) 1940; reprint 2205.

on Costs of Medical Care was made over a decade ago, followed a completely different procedure and involved a different kind of population.

The difference between urban and rural areas relative to the amount of medical care furnished not only may reflect differences in morbidity, or in the mores with reference to demand for medical care, but also may be caused by the flow of patients from rural to urban areas. Therefore the differences observed in table 7 do not necessarily mean only that Washington and Baltimore residents receive more medical care than do the residents of the counties of Maryland but they also may mean that the physicians of the two cities furnish service to a substantial number of persons not resident there. For example, in the survey from which the Washington, D. C., data were acquired[6] it was found that 15 per cent of the patients of the physicians who replied to the questionnaire were nonresidents of the District of Columbia. Correcting for this flow of patients would reduce the annual number of calls per person among Washington, D. C., residents to 5. This average is not much larger than that computed for the state of Maryland.

Comparing Washington and Baltimore, one finds differences in the distribution of physicians according to type of practice and according to color and to sex. These differences are demonstrated in the total annual number of services given. Thus, although the populations of the two cities are almost of the same size, it is estimated that the general practitioners of Baltimore annually make 3,022,600 calls to private patients as compared with 1,771,000 made by the Washington general practitioners. On the other hand, a greater number of services are given by the Negro and female physicians and the internists

TABLE 9.—*Average Number of Hours Spent in Office Seeing Patients (White Male General Practitioners)*

Age Group	Average Number of Hours per Day (± Standard Deviations)		Estimated Average Number of Weekly Office Patients per Hour Spent in Office	
	Baltimore	Maryland Counties	Baltimore	Maryland Counties
Under 35	5.2 ± 1.8	6.1 ± 1.8	20	20
35-44	5.8 ± 2.0	6.5 ± 1.6	19	20
45-64	4.9 ± 1.8	5.5 ± 1.8	14	16
65 and over	4.7 ± 1.6	5.3 ± 2.0	9	8
All ages	5.2 ± 1.8	5.9 ± 1.8	16	16

of Washington than by the corresponding groups of physicians in Baltimore.

It has already been seen that the majority of the groups of specialists have a smaller patient load and shorter office working hours than do the general practitioners. However, a comparison between the percentage of estimated annual services given by the several types of practitioners and the percentage of each type of practitioner reveals a close parallelism. This is shown in table 8. Except for the neurologists and psychiatrists, who constitute 3 per cent of the private practitioners but give less than 1 per cent of the total physicians' services, there is on the whole little difference between the relative frequency of the specific types of practitioners and the proportional amount of medical services given by each type.

COMMENT

The data presented here concern the activities of physicians as they are manifest at present in the areas surveyed. Obviously, the situation described cannot be equal to prewar conditions. With the withdrawal of some 25 to 30 per cent of the physicians from these areas the average patient load per remaining physician has certainly increased, and it is probable that the increase may have affected the younger age groups more than the older. The data presented should be carefully evaluated in relation to the peculiarities of the times, but there is no doubt that the results of the analysis bring out certain important features pertinent to the solution of the problem of measuring civilian demands for medical care and of estimating numerical criteria for the selection of physicians from the population.

6. Ciocco, Antonio; Pond, M. A., and Altman, Isidore: A Survey of Practicing Physicians in Washington, M. Ann., District of Columbia **11:** 454-457 (Nov.) 1942.

In the first place, there are apparently age differences with regard to patient load and to office working time of physicians. Hence, the withdrawal of men below 45 years of age from a population has not the same effect as that of withdrawing men above that age. Not only do the younger men see a greater number of patients and spend more time in the office seeing

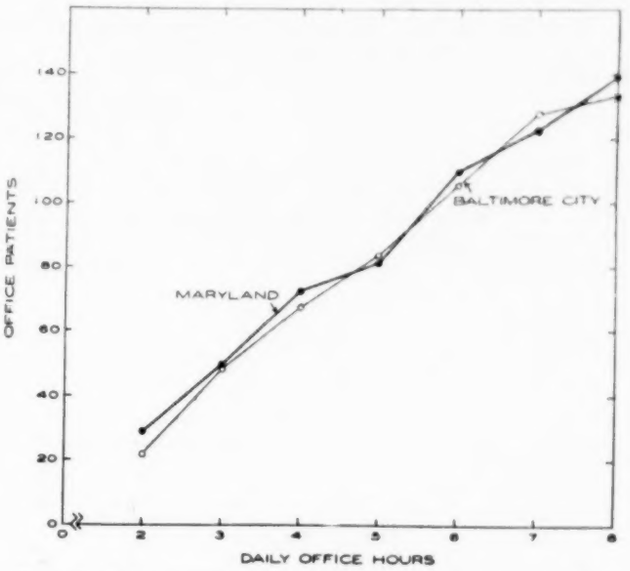


Chart 3.—Average number of office patients seen in one week by Maryland general practitioners (white males under 65) according to daily number of office hours. The Maryland curve includes figures for Baltimore City.

patients but they also see more patients in a given unit of time than do the older men. The general practitioners under 45 years of age have a patient load 25 to 50 per cent greater than that of other men between 45 and 64 years of age and more than twice as large as that of general practitioners 65 years and older. In Washington, D. C., among the white male general practitioners, for example, although the men under 45 years constitute less than 50 per cent of the physicians, they see almost 60 per cent of the patients. These findings serve to emphasize the need for careful consideration of the

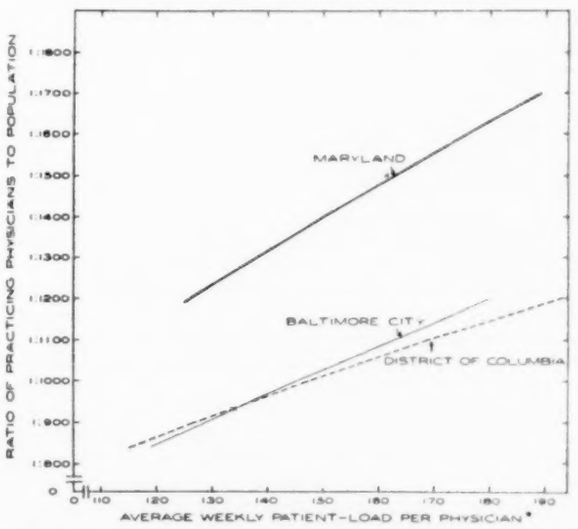


Chart 4.—Estimated change in average patient load of remaining physicians as ratio of physicians to the population decreases. The Maryland curve includes figures for Baltimore City.

age distribution of the physicians of a community when preparing to establish the number that can be released for military service. For example, in a community containing two physicians, one 35 and the other 65 years of age, one could maintain that the removal of the younger man will mean the loss of not one half but of two thirds of the physicians.

With reference to the specific problem of arriving at a measure of the civilian demand [7] for medical services, data on the patient load of physicians offer a simple and direct approach if it is assumed that at present the demand does not exceed the capacity to meet it. The information on the patient load permits the calculation of the total medical services furnished to a population, as has already been shown and, in addition, offers a measure of the effects of the withdrawal of physicians in terms of the amount of work that will have to be assumed by the remaining physicians in order to provide the amount of services furnished at present.

TABLE 10.—*Estimated Average Patient Loads for Specified Ratios of Physicians to Population*

Ratio of All Active Private Practitioners to Population	Number of White Male General Practitioners		Average Weekly Patient Load of Remaining Practitioners	Percentage Increase in Patient Load	
	To Be Withdrawn *	Remaining		Over Present Average of Total †	Over Present † Average According to Age of Remaining Practitioners ‡
Washington, D. C.					
1:828 †	0	308	115	0	0
1:900	28	280	127	10	12
1:1,000	67	241	147	28	34
1:1,100	98	210	169	47	58
1:1,200	124	184	193	68	87
Baltimore					
1:841 †	0	508	119	0	0
1:900	38	470	129	8	11
1:1,000	92	416	145	22	29
1:1,100	136	372	163	37	51
1:1,200	173	335	180	51	75
State of Maryland					
1:1,190 †	0	948	125	0	0
1:1,200	9	939	126	1	1
1:1,300	90	858	138	10	14
1:1,400	160	788	150	20	27
1:1,500	220	728	163	30	43
1:1,600	273	675	176	41	69
1:1,700	320	628	189	51	78

* Assuming proportion of general practitioners to all practicing physicians is same as of Oct. 1, 1942.
† Ratio on Oct. 1, 1942.
‡ Assuming that all withdrawals are below 45 years of age.

Table 10 and chart 4 illustrate for Washington, D. C., Baltimore and the state of Maryland the relationship of the reduction in the ratio of physicians to population to the patient load of the remaining white male general practitioners. The effects of the reduction of physicians on the average patient load are almost the same in Baltimore and in Washington. For example, by reducing the ratio of physicians to population to 1:1,000, the average weekly patient load of the remaining general practitioners would be increased to 145 in Baltimore and 147 in Washington. For Maryland the relationship is established at a different level of ratio of physicians to the population since we are dealing with a combined rural and urban population.

In the last column of table 10 an attempt is made to measure the effects of the age differences in patient load in relation to the age selection of the physicians withdrawn from the population. Assuming that all the physicians withdrawn from civilian practice are below 45 years of age, the increase in the patient load due to the reduction of physicians has been computed on the basis of the patient load now carried by the men who remain. Thus an increase in the patient load of the general practitioners of Baltimore City to 180 patients per week means an increment of 51 per cent if the increase is calculated from the all age average of 119, and of 75 per cent when the present patient load of the remaining practitioners is taken into account.

Since the data of table 7 and chart 4 furnish a measure of the amount of work that would have to be assumed by the practitioners remaining in a population after the withdrawal of a stated number, a first step is available toward the solution of the primary and most important problem of estimating how many physicians it is possible to withdraw from a population and still satisfy the present demand for physicians' services.

An adequate solution requires, in addition, a precise evaluation of the maximum patient load that physicians can be expected to carry. Once that maximum is known, then the number of physicians needed to satisfy the present civilian demand for medical care can be easily determined from data of the kind presented in table 10 and chart 4. The information collected in the present survey does not furnish a conclusive and definitive measure of the maximum patient load, but, mainly for the sake of illustrating the method to be employed, some tentative values can be derived from the results of the analysis.

For example, it could be assumed that private practitioners can be expected to work at most between 2,000 and 2,500 net hours annually. In a five day week and a fifty week year this would mean a working day of between eight and ten hours. It will be recalled that the general practitioners who spend eight hours in their office see on the average 140 patients weekly, and it can be calculated that those who spend nine hours in the office see an average of 158 patients weekly. Seeing patients in the office facilitates speed and economy of action; hence it can be reasoned that these values represent approximations of the average maximum patient load of private general practitioners.

According to the foregoing premises, the maximum number of patients that can be seen by a general practitioner would vary between 140 and 160 weekly, on the average. Let us return to chart 4 and table 10 to appreciate the significance of these maxima in terms of the ratio of physicians to the population and of the present patient load. A weekly average patient load of 140 would require a ratio of one physician to 960 persons in Washington, D. C., one to 970 in Baltimore and one to 1,315 in Maryland. A weekly average patient load of 160 requires instead a ratio of one physician to 1,060 persons in Washington, D. C., one to 1,085 in Baltimore and one to 1,475 in Maryland. From table 10 it will be seen that a weekly average patient load of 140 for Washington, D. C., represents an increase of approximately 22 per cent over the present patient load or, when the ages of the remaining general practitioners are considered, of approximately 26 per cent. If instead 160 patients weekly are considered the maximum average patient load, then the increments over the present patient load become approximately 39 and 48 per cent, respectively. Similar results are obtained for Baltimore City and the state of Maryland.

To evaluate correctly these resulting increments, it should not be forgotten that already the present average patient load per physician represents an increase of perhaps 25 per cent over that of 1940. Thus, if the patient load of a group of physicians is increased by 40 per cent, for example, over that of the present, it is actually increased by about 75 per cent over that existing in 1940. Therefore, the pertinent question to be asked, before accepting any proposed value of the maximum patient load, is whether or not the remaining physicians are able to sustain the added burden.

TABLE 11.—*Estimated Number of Specialists per Hundred Thousand Population for Specified Ratios of Physicians to Population*

Special Practice	Number of Specialists per 100,000 Population					
	Washington, D. C.		Baltimore		Maryland (Total)	
	Ratio of All Private Practitioners to Population					
	1:1,000	1:1,100	1:1,000	1:1,100	1:1,300	1:1,400
Internal medicine	9.4	8.2	8.5	7.6	5.1	4.7
Surgery	8.4	7.3	7.3	6.5	4.8	4.4
Obstetrics and gynecology	6.3	5.4	7.0	6.4	3.7	3.4
Pediatrics	3.7	3.3	4.5	4.0	2.6	2.4
Ophthalmology and otorhinolaryngology	7.8	6.9	5.6	4.9	3.8	3.5
Neurology and psychiatry	2.0	1.8	2.3	2.0	1.3	1.2

When the upper limit of the ratio of all physicians to population is established in the manner indicated, an attempt can also be made to arrive at the ratio of the several types of practitioners needed for a population. Since the proportion of services

7. The demand for medical services is not to be confused with the need for such services. Obviously, the number of patients actually seen by physicians will not, except under ideal conditions, equal the number of persons needing medical care.

rendered by each of the several types of practitioners is essentially equal to the proportion of each type of practitioner, it can be inferred that any decrease in the total number of physicians will affect equally the general practitioners and each of the groups of specialists. Thus, by maintaining constant the relative number of each kind of specialists, the decrease in absolute number can be estimated in relation to the decreases in total number of physicians. Table 11 presents the results of estimating the number of specialists per hundred thousand population when the ratio of physicians to population is reduced to specified limits. If it is accepted that the ratio of physicians to population can be reduced to 1:1,000 in urban centers such as Baltimore and Washington, according to the calculations presented in table 11 it will be necessary to retain, for each 100,000 persons, eight to nine internists, seven to eight surgeons, six to seven obstetricians and gynecologists and so on. In a state which contains both urban and rural elements, a relatively smaller number will be required to furnish the same amount of services as that currently provided.

It is important to realize that these results are based in part on certain assumptions that have not been fully proved and are presented here mainly to illustrate the method of approach. However, it seems clear that the results of the study warrant the conclusion that data on the patient load of physicians offer a simple and direct approach to a solution of one aspect of the problems arising from the withdrawal of physicians for the armed services. When all is considered, the amount of medical care that the population can receive depends not only on the number but also on the working capacity of the physicians practicing in the population.

SUMMARY

Data on the number of patients seen in one week by physicians in private practice were obtained in a survey conducted in the District of Columbia and in the state of Maryland by mailed questionnaire. In Maryland, data were also secured on the number of hours a day routinely spent in the office seeing patients.

Replies were received from 60 and 66 per cent of the physicians in the District of Columbia and Maryland, respectively. The distribution of replies by type of practice and age, sex and color of the practitioners supports the belief that on the whole a representative sample was obtained of the physician population questioned.

The average weekly patient load among general practitioners is 115 patients in Washington, 119 in Baltimore and 132 in Maryland outside of Baltimore. Differences by age in these areas are striking. Physicians 65 years and older have an average patient load of less than half the average for men between 35 and 44, the latter being the group with the highest number of patients. Physicians under 35 had a higher average patient load than the group 45 to 64 years old.

Approximately 70 to 75 per cent of the patients attended by general practitioners are seen in the office. There is a strong tendency for the older men to make relatively more home calls than the younger men.

On the whole, specialists carry a somewhat smaller patient load than do general practitioners. For psychiatrists and neurologists the patient load is very low, since by the nature of their work the number of patients they can see in one week is necessarily small. The younger specialists apparently see the greater number of patients.

General practitioners of Maryland spend five to six hours daily on the average in routine office practice. Specialists spend about four. It is found that the more time spent in the office the more patients are seen, with the number of patients increasing at an almost constant rate for each additional hour.

From the data collected, estimates can be made of the total amount of medical services given by the physicians of the communities involved and thus a measure obtained of the effect of withdrawing physicians for the armed forces. The data permit also an estimate of the maximum volume of services that a physician can be expected to furnish. Such information should prove valuable in establishing quantitative criteria to determine the essentiality or availability of physicians in relation to the needs of the community.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

THE THERAPEUTIC VALUE OF ULTRAVIOLET RADIATION

(Continued from page 129)

UNDESIRABLE RESULTS IN DERMATOSES

Many of the inflammations, especially when acute or subacute (eczema, psoriasis and the like), may be made more acute or to spread or change character by too vigorous treatment with ultraviolet radiation. For instance, a patch of subacute eczema of any type may change to exudative eczema and may then become more or less generalized (infectious eczematoid dermatitis). Although a patch of chronic psoriasis will usually tolerate and may even be benefited by an erythema dose, on the other hand the patch may spread over the area of erythema if the normal skin is not protected. When treating individual lesions of any dermatosis, it is advisable to protect the surrounding normal skin. Generalized psoriasis, especially if it is of the more acute or inflammatory type, if treated too vigorously, may change to universal psoriasis or dermatitis exfoliativa. The same phenomenon is observed at times in cases of eczema. It is admitted that vigorous treatment may at times make large patches of psoriasis and eczema disappear, but such treatment is risky.

Large doses of solar radiation and of artificially produced ultraviolet radiation may precipitate attacks of herpes simplex and lupus erythematosus. Erythema and even suberythema doses of ultraviolet radiation applied to the normal skin of patients suffering from lupus erythematosus may cause the development of the disseminated type of the disease. In certain individuals infra-red rays or any form of heat applied for a considerable period will provoke a mottle erythema and pigmentation known as erythema ab igne.

The so-called sailors' skin or farmers' skin is a presenile condition of the skin of the exposed parts occurring in persons who are exposed to solar radiation more or less constantly for many years. The skin is wrinkled and dry, and keratoses of the senile type are likely to develop. These in turn not infrequently change to cancer. Farmers' skin may consist only of permanent freckles, most commonly seen on the shoulders, the upper part of the back, the chest and the backs of the hands. These freckles are not especially dangerous, but occasionally one may change to a keratosis and later to cancer. Farmers' skin in many ways resembles the so-called x-ray or radium skin (x-ray or radium sequelae). It also resembles xeroderma pigmentosum, a condition due to exceedingly low cutaneous tolerance to light.

It becomes manifest on the exposed parts of such patients early in life, being most pronounced on the face. The eyes are congested, the skin is dry and atrophic, ectropion develops and there are innumerable freckles of the permanent type and keratoses of the senile type. Curiously, many of these keratoses change to basal cell epitheliomas rather than to epitheliomas of the prickle cell variety. Patients who have a low cutaneous toleration to light not only should avoid direct sunlight and artificially produced ultraviolet radiation but should avoid strong daylight, because diffused sunlight and reflected light from snow, water and sand contain large amounts of ultraviolet radiation. If such patients find it necessary at times to be exposed to strong solar light, the face and hands should be protected with veils, walnut stain, an alcoholic solution of glycerite of tannin, or cream containing dark substances, such as burnt sugar or ichthammol. A preparation which has been found effective to protect the skin against the effects of ultraviolet radiation is the following:

℞	Phenyl salicylate	1 Gm.	gr. v
	Tannic acid	5 Gm.	ʒ ss
	Wool fat		
	Petrolatum flavosum ..... aa q. s. ad	100 Gm.	ʒ i

For very mild cases, a coating of yellow petrolatum followed perhaps by a dark colored powder may provide sufficient protection. The fad of exposing bodies of children to solar radiation and artificially produced ultraviolet radiation daily and indefinitely without medical supervision may eventually give rise to farmers' skin in a small percentage of children who happen to be idiosyncratic.

Hydroa vacciniforme is a rare bullous disease, mostly of children, limited to the exposed parts and occurring during the spring, summer and fall. The etiology is supposed to be associated with the effect of light on the skin of a susceptible person. Hematoporphyrin has been found in the urine of these patients, and it is thought that this and other substances may have something to do with sensitization to light. In the same category may be placed pellagra, and summer prurigo melanosis, simulating chloasma and argyria, has been reported following sunburn.

Certain substances when injected into the body or painted on the skin appear to cause sensitization to light. There is one instance in the literature (Meyer-Betz) in which hematoporphyrin was injected. Exposure to the light caused edema of the hands and face. Eosin, when painted on the skin combined with exposure to light, may result in severe dermatitis. Oil of bergamot and perfumes on the skin may be followed by dermatitis and pigmentation on even mild exposure to sunlight or ultraviolet radiation (berlock dermatitis). Attempts in this way have been made to modify or cure leukoderma with occasional success.

Skin affected with certain diseases, especially with the desquamating fungous diseases such as chromophytosis, when subjected to radiation that causes tanning may assume a peculiar appearance, so much so as to interfere with diagnosis. Chromophytosis is a good example. The patches of eruption are of a yellowish brown, and the surrounding normal skin tans so that its color matches fairly well that of the affected areas. The patches of disease do not tan because the slightly thickened horny layer absorbs the radiation. Exfoliation of this horny layer leaves white patches, which are in sharp contrast to the surrounding tanned skin. Urticaria and certain forms of recurrent acute dermatitis of the face, neck, forearms and hands are at times thought to be due to sensitization to light.

Conjunctivitis and other eye troubles may be caused by excessive exposure to direct sunlight, reflected sunlight and radiation from ultraviolet generators. Ultraviolet rays from the so-called cold quartz lamp are particularly prone to produce conjunctivitis. Depending on the exposure and the susceptibility, the inflammation may be slight or severe, transient or persistent. Arctic explorers and mountaineers occasionally have "snow blindness." In the industrial field, acetylene and arc welders have trouble with their eyes unless they wear goggles.

Ordinary glass will protect the eyes from ultraviolet rays, but, for protection from all ultraviolet wavelengths and visible light, it is preferable to use glass of a dark color—amber, green or black. It is important that the goggles be edged with soft, opaque material that will obstruct the passage of light between the goggles and the skin.

SUNBURN

Ordinary sunburn is known as erythema solare and dermatitis actinica. In this category may, of course, be placed burns caused by ultraviolet radiation from any source. The reaction may consist of no more than a slight erythema—a flush—or definite erythema accompanied by a sensation of heat followed in a few days or a week by itching and exfoliation. If the reaction is more severe there is edema, vesiculation, erosion and perhaps exudation. The subjective symptoms are burning and itching. Depending on the degree of reaction, spontaneous recovery occurs, as a rule, in from a few days to a few weeks. Occasionally recovery is delayed. Erythema and edema have been known to endure for months. Regardless of severity, in the absence of complications sunburn does not produce a scar. When the area burned is extensive, there may be constitutional symptoms consisting of malaise, headache, fever and vomiting. In fact, a more or less severe constitutional reaction may occur in the absence of a burn when radiation is applied to the entire body. Such a reaction indicates that the dose is too high for the individual.

Mild and moderate local sunburn requires little if any treatment. Ointment of rose water or almond emulsion may allay the sensations of burning and dryness. When such a burn is extensive and especially when accompanied by constitutional symptoms, the patient may have to spend a few days in bed. Whether the burn is local or more or less generalized, the type of topical treatment indicated depends on the cutaneous objective and subjective symptoms. Constant wet dressings of boric acid, sodium bicarbonate, watery extract of witch hazel or diluted solution of aluminum acetate are indicated when there is vesiculation, erosion and exudation, or when the burning sensation is distressing. When the skin is inflamed and dry, applications of the following lotion may be prescribed:

℞ Zinc oxide			
Magnesium carbonate	aa	8.0 Gm.	3 ii
Alcohol		15.0 cc.	f3 ss
Menthol		0.3 Gm.	gr. iv
Phenol		2.0 cc.	f3 ss
Lime water, q. s.	ad	120.0 cc.	f3 iv

Unscented cold cream containing 1 grain (0.06 Gm.) of menthol and 1 drachm (4 Gm.) of petrolatum or hydrous wool fat to the ounce (30 Gm.) may be used for the same purpose.

Tan and ordinary freckles disappear completely in time, provided light is avoided. Their disappearance can be hastened by the application of lotions and creams that encourage desquamation. Formulas for such remedies are in all textbooks on dermatology.

METABOLISM [1]

The blood sugar of normal men is not influenced to any extent by ultraviolet irradiation. In some persons with diabetes the blood sugar may be temporarily diminished. The decrease is probably due to increased excretion of insulin and may be accompanied by increased storage of glycogen in the heart, liver and muscle.

It is the opinion of most authorities that irradiation of lactating women increases to some extent the quantity and antirachitic potency of the milk.

Irradiation of moderate intensity increases endogenous nitrogen metabolism. Residual nitrogen is usually diminished. The excretion of uric acid is said to increase, giving support to the use of ultraviolet in the treatment of gout. Ultraviolet irradiation may double the fat content of the blood, cholesterol increasing by 30 per cent.

The effect of ultraviolet irradiation on respiration is to make it easier, deeper and less frequent, although total ventilation per minute remains constant. It is generally accepted that basal metabolism is not influenced by ultraviolet irradiation. When an increase in metabolic rate is observed on isolating the nude body it is due preeminently to the cooling effect of the moving air. If the air temperature is high with little or no air movement, the chemical heat regulating mechanism is brought into action and the metabolic rate diminishes.

Ultraviolet irradiation exerts a glycogen storing effect, preventing the lowering of the respiratory quotient after muscular exercise, which lowering is due to glycogen impoverishment.

Practically all attempts to show effects of light on normal growth processes of man and animals have been negative. Animals will grow as well in darkness as in light if the diet is complete.

Ultraviolet has no influence on the activity of the thyroid. The goiter producing power of cabbage is reported to be increased by ultraviolet irradiation.

The antirachitic effect of ultraviolet occurs in the lowermost cells of the horny layer and in the prickle cells of the malpighian layer, while the production of erythema takes place in the basal cells (germinativum) of the malpighian layer and in the corium. The horny, clear and granular layers act as filters. Ergosterol and cholesterol can be activated by ultraviolet rays which pass

1. Laurens, Henry: The Physiologic Effects of Ultraviolet Radiation, J. A. M. A. **111:** 2385 (Dec. 24) 1938.

through the epidermal layer of the skin. Blood in the superficial capillaries absorbs only a small percentage of energy incident on the skin.

The "burn" produced by ultraviolet takes a few hours to appear and the longest wavelength that can produce it is about 3,150 angstroms. The curve representing relative effectiveness of different wavelengths rises to a maximum at 2,967 angstroms, descends to a minimum at 2,800 angstroms, then rises again to a small maximum near 2,500 to 2,450 angstroms and extends to an undetermined shorter wavelength. Blonds are from 40 to 170 per cent more sensitive than brunets, men 20 per cent more sensitive than women. Persons between 20 and 50 are more sensitive than those younger or older. There is an average maximum sensitivity in March-April and in October-November. A person with an unstable nervous system, an overactive thyroid gland, elevated blood pressure or active tuberculosis shows increased sensitivity. The sensitivity increases at the menses—a maximum being reached on the first day of the cycle—and then declines to normal. After the second month of pregnancy the sensitivity definitely increases until the seventh, after which it diminishes somewhat, being still high at term. Increased sensitivity is correlated with thyroid hyperactivity and with an increased number of open capillaries in the skin. An acid diet increases sensitivity. Salves exert a protective action, an acid salve less than an alkaline.

Erythema shows the reactions of the "triple response" and depends on the setting free of H substance. The acidity of the gastric juice increases simultaneously with its beginning.

Pigment formation and therapeutic benefit are independent, coordinate phenomena proceeding simultaneously in the same direction. Pigment formation is dependent on individual factors, race, coloring, constitution and body function. It can be used as an index in treatment. It is also a measure of adaptation, since pigment formation, horny layer thickening and chemical alterations of the skin cell proteins run parallel.

THE EYE

The cornea begins to absorb at 3,600 angstroms and transmits to between 2,950 and 3,000 angstroms, and the crystalline lens transmits to 3,060-4,190 angstroms, according to age. The vitreous transmits wavelengths as short as 2,300 angstroms, with a broad absorption band from 2,500 to 2,800 angstroms. The lens absorbs wavelengths as short as 2,950 angstroms with no ill effects, but shorter wavelengths produce a severe ophthalmia. Sunlight is ordinarily harmless, but when the ultraviolet component is increased by reflection, as from sand, water, ice or snow, it produces "snow blindness." Glowing arcs and metals which emit energy shorter than 2,950 angstroms are injurious and special ultraviolet absorbing glasses should be worn. The damage is usually limited to conjunctivitis and blepharitis, with prickling pain and uncomfortable foreign body sensation. Edema and contraction of the lids and corneal erosion may occur. Long continued exposure to intense ultraviolet may produce functional disturbances, such as color scotomas and constriction of the peripheral field. Amblyopia and central scotoma have been noted in "snow blindness." "Eclipse blindness" is due to intense local action of infra-red rays.

It is still a question as to whether intense ultraviolet produces lenticular cataract. Many incline to the view that glass workers' cataract is due to the intense infra-red rays which interfere with the nutritional functions of the ciliary body. It is probable that the higher incidence of cataracts in workers exposed to molten glass and metals is due to increased rate of precipitation of light denatured protein when the lens is heated above body temperature by exposure to large sources of radiant heat and when low concentrations of calcium, or other substances producing a similar effect, are present.

Claims have been made that some persons can see wavelengths as short as 3,130 angstroms. This is due to excitation of the retina by fluorescent (longer) wavelengths. The aphakic eye sees shorter wavelengths than the normal eye.

PHOTODYNAMIC OR OPTICAL SENSITIZATION: PATHOLOGY

It is possible to sensitize living cells, like photographic plates, and thus produce abnormal conditions in which light or luminous rays and longer ultraviolet rays are as active as the shorter ultraviolet. The effective wavelengths are those absorbed by the sensitizer. Sensitization occurs at 4,900-5,800, 3,650-3,130 and 2,500 angstroms. The sensitizers are exogenous, taken in with the food, and endogenous, arising within the organism. Most sensitizing substances are fluorescent, but fluorescence is not the cause. Ultraviolet effects can occur either in the presence or in the absence of oxygen, but the photodynamic effects occur only in its presence. Among photodynamic sensitizers are erythrosin, rose bengal, rhodamin, anthracene derivatives, acridine dyes, methylene blue, quinine, chlorophyll, hypericin and the porphyrins. Gold salts and chemicals of the sulfonamide group are also sensitizers.

Continued and prolonged exposure to sunlight or to the energy of artificial sources containing much ultraviolet may cause systemic disturbances as well as inflammatory and degenerative changes in the skin. The systemic disturbances are not understood, but deaths of infants following short exposure have been reported and severe reactions in adults.

Photodynamic "triple response," produced by intradermally injecting rose bengal and hematoporphyrin, is similar in appearance to urticaria solare and is produced by the wavelengths absorbed by the particular sensitizer. The response is immediate. It is followed by pigmentation and does not occur in the absence of oxygen. The mechanism of the urticarial response includes a photochemical reaction not definitely affected by temperature and a thermal reaction greatly modified by changes in temperature. The latter is probably due to the action of the H-like substance on the small vessels of the skin. The photosensitizer is a carotenoid pigment.

The relation of ultraviolet to pellagra is difficult to evaluate. The clinical impression that sunlight is harmful to the pellagrin has been confirmed again by Smith and Ruffin, according to whom the seasonal incidence of pellagra is conditioned by the degree of dietary deficiency and the intensity of the solar radiation. Exposure of a susceptible subject, who has been subsisting on a deficient diet, to the sun's rays precipitates the acute manifestations of pellagra. Pellagrous lesions, however, occur in the absence of sunlight and they may heal in the presence of exposure to direct sunlight or to ultraviolet radiation. Spies suggests that pellagra is a systemic condition which in itself is the real cause of pellagrous dermatitis and not exposure to the rays of the sun. Under conditions sunlight may act as an irritant and precipitate cutaneous lesions. But any kind of irritant may predispose an area to localization of the dermatitis, the absence of which, however, indicates little as to the cure of the disease. Porphyrinuria in pellagra has been described.

Repeated irritation by ultraviolet rays can cause chronic lesions, which may be precancerous, such as keratosis senilis and xeroderma pigmentosum. It is an open question as to whether xeroderma pigmentosum and skin cancer are really associated with photodynamic action. Roffo believes that in the carcinogenic production of skin cancer by ultraviolet the photodynamic action of cholesterol plays the most important part. The photoactivity is due to the emanation of hydrogen peroxide or similar products. Korbler does not believe that the frequency of skin cancer is due solely to exposure to strong sunlight, although it may result in sensitization due to local increase in porphyrin.

The action of radiation is paradoxical in this regard. If the cells of the basal layer of the skin receive an excessive quantity of radiant energy the two protective processes of cornification and pigmentation become abnormally great (hyperkeratosis and hyperpigmentation) and a third degenerative process starts. People lacking in pigment or much exposed to ultraviolet rays show the highest percentage of skin cancer. The developing neoplasm occurs in the place of greatest proliferation, beginning in a wartlike hyperkeratosis, a precancerous change. A cancer develops from a precancerous lesion not only as a result of a continuation of the initial insult but as a result of any continued trauma. Thus ultraviolet rays do not cause cancer in themselves. They produce characteristic cell changes leading to precancerous lesions in the skin. Any irritation, including continuously and excessively applied ultraviolet rays, can cause the precancerous change to become malignant.

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SATURDAY, FEBRUARY 13, 1943

TREATMENT OF CEREBROSPINAL FEVER

The current increase in the number of cases of meningococcic meningitis in various parts of the country, which was to be expected in view of the military and industrial mobilization, has emphasized recent advances in the treatment of the disease. These improvements depend almost wholly on the use of the sulfonamide compounds. Until recently many clinicians experienced in this disease advised combined treatment with some form of antiserum and a sulfonamide compound at least for the more serious cases. However, the shift from intraspinal to intravenous serum therapy, advocated especially by Herrick and Hoyne, had generally prevailed. Accumulation of data seems now to show that drug treatment alone will bring better results than combination with such an agent as foreign serum, which, even when given intravenously, may initiate a considerable number of reactions.

In England, for example, a statistically adequate number of patients treated with serum alone gave a fatality of 36.6 per cent as a whole. Of those under 1 year of age 67.2 per cent died, of those from 1 to 4 years 38.6 per cent and of those from 5 to 14 years 22.7 per cent. With sulfonamide compounds plus serum, of those under 1 year 32.5 per cent died, from 1 to 4 years 16.5 per cent, from 5 to 14 years 8.4 per cent, from 15 to 24 years 4.3 per cent, from 24 to 44 years 14.1 per cent and 45 years and over 32.3 per cent, with a total fatality of 13.8 per cent. Treatment with sulfonamide compounds alone gave better rates in each age group: under 1 year 22.4 per cent, from 1 to 4 years 12.3 per cent, from 5 to 14 years 5.5 per cent, from 15 to 24 years 2.5 per cent, from 25 to 44 years 6.6 per cent and 45 years and over 28.8 per cent, with a total fatality of 9.2 per cent. Aside from the rare and practically always fatal cases of Waterhouse-Friderichsen [1] syndrome with circulatory collapse, hemorrhage into the adrenals and hemorrhagic rash, the prompt diagnosis and early vigorous treatment, preferably with sulfadiazine, will save cases which had fatal prognosis with serum therapy, and in practically all cases recovery is much more prompt.

Other sulfonamide compounds may be used instead of sulfadiazine, including sulfathiazole, which was formerly held to be less effective because it was less uniformly excreted into the cerebrospinal fluid. Most important is the prompt securing of a high blood concentration of 15 mg. per hundred cubic centimeters. Lumbar puncture is necessary practically only for initial diagnosis, and an attempt should be made to find the organism by blood culture. The proper dosage of the sulfonamides is provided in detail in New and Nonofficial Remedies, 1942, pages 139 to 166.

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INTELLECTUAL WORKERS AND PHYSICAL EXERCISE

Few studies have been made to determine the amount and nature of physical exertion which is optimal for those in sedentary occupations involving primarily concentrated and prolonged activities of the higher mental centers. Observation leads to the conclusion that most persons engaged in intellectual occupations take too little physical exercise for maximum health: most medical students, for example, are inclined to indulge little or not at all in physical exercise. Those engaged in intellectual endeavors report that strenuous exertion (usually when they are not used to it) results in an appreciable decrease in ability to make constructive intellectual efforts during the immediately subsequent hours or even days. Although such observations cannot be used as scientific evidence, the problem of balancing physical conditioning with maximum intellectual output is particularly pressing today, when the curriculums of schools devoted to advanced education are being modified to include conditioning for military service.

The armed forces plan to induct all physically fit boys 18 years of age or older. By methods of selection which have not yet been announced in detail a number of these young men will be selected to attend colleges and universities. While attending these institutions they will be expected to engage in strenuous and prolonged intellectual endeavors. During this period they are to be paid and housed by the armed service involved and will be just as much in the military service as those in camp or at the front. They will be required, no doubt, to take certain physical hardening courses and sports, probably provided for specifically by the respective service involved.

Good physical condition is favorable rather than detrimental to intellectual work. Nevertheless, the primary purpose of placing these soldiers in colleges and universities rather than at the battle fronts is to give them the intellectual training which they can receive

only from the former source. The physical "conditioning," therefore, is the secondary rather than the primary consideration. The intensity and amount of exercise for the soldier-student should be subordinated to the intellectual training. In determining the amount of exercise required of soldiers in colleges and universities, cognizance must be taken of individual variability and of the hours and nature of mental concentration required. The program of physical training of student-soldiers must be carefully controlled with a view to determining the best combination. If the physical training interferes with the maximum utilization of the educational facilities, the major purpose of the announced program will have been hindered.

AMERICAN SOCIETY FOR RESEARCH IN PSYCHOSOMATIC PROBLEMS

In recent years the development of medicine has revealed increasing interest in the patient as a whole. Whereas recent discoveries in pharmacology, biochemistry and endocrinology may be more spectacular, they are likely to make us overlook the steadily growing need of integrating all this specialized knowledge in the light of the functions and structure of the total organism. Logically psychiatry became the focus for crystallization of these unifying tendencies. Dr. William Allen White pointed out that psychiatry deals with the total reactions of the organism. In somatic medicine the patient's stomach, liver or blood vessels are the doctor's concern; in psychiatry the patient's actions are investigated. Psychosomatic medicine attempts to bring together these two points of view. In the psychosomatic approach the investigators seek to find the relationship between what the stomach is doing and what the patient as a whole is doing. How do the patient's emotions, his effort, hopes, discouragements and anxieties influence the different parts of his body? Psychosomatic medicine, however, is not a new specialty; the gradual penetration of the psychiatric point of view into general medical thought will cause the medical specialties to take the lead in exploring the psychologic component in disease.

The journal *Psychosomatic Medicine* says:

> Emphasis is put on the thesis that there is no logical distinction between "mind and body," mental and physical. It is assumed that the complex neurophysiology of mood, instinct and intellect differs from other physiology in degree of complexity but not in quality. Hence again divisions of medical disciplines into physiology, neurology, internal medicine, psychiatry and psychology may be convenient for academic administration, but biologically and philosophically these divisions have no validity. It takes for granted that psychic and somatic phenomena take place in the same biological system and are probably two aspects of the same process, that psychological phenomena should be studied in their psychological causality with intrinsically psychological methods and physiological phenomena in their physical causality with the methods of physics and chemistry.

The psychomatic interest in medicine is not novel. Such ancient expressions as melancholia (*melas*, black; *chole*, bile) reflect concepts concerning the relation of mental symptoms to bodily functions. New in the present psychosomatic movement is the integration of advanced methods of physiologic and clinical investigation with modern methods of dynamic psychology. The two avenues of research—the somatic and the psychologic—meet now on the level of present day knowledge.

Understanding of the patient's mental condition in the past was primarily a question of intuition, usually called the art of medicine or, in its more superficial form, "bedside manner." Psychosomatic research strives to transmute this art into a science, basing conclusions on well established principles affecting the relationship of emotions and bodily functions.

During the past ten years various research centers have focused their investigative work on the study of psychosomatic conditions.[1] The impetus of the war has greatly increased this interest. Probably few physicians realize how many such centers are now active in this field. Among the older medical projects have been those at Presbyterian Hospital in New York, the Institute for Psychoanalysis in Chicago and the Massachusetts General Hospital in Boston. Dr. Soma Weiss, before his untimely death, had planned a series of investigations. The studies already completed have concerned cardiovascular diseases, injury from accident, gastrointestinal disorders, diabetes mellitus, asthma and hay fever, as well as biologic processes. Correlation between emotional factors and the ovarian cycle has been a project of special note. Studies by psychologists and physiologists on animals, following the lead created by investigation of the conditioned reflex, have contributed much; for example, the work of H. S. Liddell and his group at Cornell University and of W. Horsley Gantt and Curt P. Richter at Johns Hopkins University.

On Dec. 18, 1942 an inaugural meeting of the American Society for Research in Psychosomatic Problems was held in New York in conjunction with the annual meeting of the Association for Research in Nervous and Mental Diseases. This meeting was organized by the board of editors of *Psychosomatic Medicine*. An incentive for the foundation of this new society was the growing interest of the armed forces in the study and treatment of psychosomatic conditions. Disturbances such as air neurosis and the more acute forms of "pilot's fatigue" are primarily of psychosomatic nature and constitute one of the major problems of aviation medicine. The American Society for Research in Psychosomatic Problems attempts to provide a platform for the exchange of ideas and experiences in this vital and rapidly expanding approach to medicine.

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VITAMIN D AND DIHYDROTACHYSTEROL

Among the products derived from ergosterol on irradiation are two compounds with closely similar structure, calciferol and tachysterol. The former, known as vitamin D_2 in the European literature, is known here, when dissolved in oil, as viosterol. About twelve years ago the suggestion was made that the toxic effects of overdosage with irradiated ergosterol were due to something other than vitamin D; an active calcifying factor was discovered which would not cure rickets. This substance was identified as a dihydrotachysterol, a derivative of tachysterol. This substance, known also as A. T. 10, has the property of increasing the level of serum calcium and also of causing a definite urinary excretion of phosphorus, properties which suggested its use in human parathyroid tetany, with highly favorable results.[1]

The early claims that dihydrotachysterol was ineffective in curing rickets were reinvestigated by Shohl and his co-workers,[2] who concluded that it is effective in curing the low calcium type of experimental rickets; the high calcium type is not as susceptible to cure by dihydrotachysterol, though large doses show an effect. Nevertheless the Harvard investigators believe that dihydrotachysterol resembles vitamin D more than it does the hormone of parathyroid as regards the effects on serum calcium and phosphorus. The kind of experimental animal employed exerts a pronounced influence on the relative actions of dihydrotachysterol and vitamin D. Correll and Wise,[3] who used chicks in their studies, observed that, when compared on the basis of rat units, dihydrotachysterol was somewhat more potent for chicks than is cod liver oil and much more potent than the vitamin D from irradiated ergosterol. The calcium-phosphorus metabolism of the chick is more responsive to dihydrotachysterol than to vitamin D from the usual sources.

A still further differentiation between dihydrotachysterol and vitamin D has been reported by the Harrisons.[4] Through the experimental device of comparing creatinine clearance with phosphate clearance, the magnitude of reabsorption of phosphate in the renal tubules has been estimated. In normal animals this maximum rate under controlled conditions is increased by the administration of vitamin D, thus serving to support the level of phosphate in the blood. After dihydrotachysterol is given, the maximum phosphate absorption rate remains unchanged. On the basis of these studies it is concluded that vitamin D is essential for certain cellular functions in the body and cannot be replaced by dihydrotachysterol. Indeed, the point is made that the characteristic action of dihydrotachysterol depends on the presence of vitamin D.

Thus it has been possible, with further research, to indicate functional differences between these compounds, which grossly show considerable similarity. Furthermore, investigations of the comparative activity of the two substances, already of proved worth in therapeutics, have emphasized again the high specificity of biologic function conditioned by slight changes in the structure of chemical agents.

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Current Comment

RESERVE PROTEIN IN THE LIVER

In his classic paper on glycogen in 1903 Pflüger[1] suggested that the liver might serve as a storehouse for protein as well as for carbohydrate. Experimental evidence has accumulated which indicates that the contention of Pflüger was correct. In 1906 Seitz[2] showed that the feeding of protein to fasted experimental animals resulted in an increase in liver protein which in a degree was comparable to the augmentation of liver glycogen that follows the administration of carbohydrate to fasted animals. In more modern work Addis and his co-workers[3] have studied the protein content of the tissue of animals fed different amounts of protein daily for a number of days. As the amount of protein ingested by the animals was increased, the proportion allocated to the liver, blood serum and kidney increased, while there was a slight fall in the proportion allotted to the carcass. The protein enrichment of the liver which follows the administration of high protein diets is associated not only with hyperplasia or hypertrophy but also with an increased content of protein per unit weight of tissue.[4] Moreover, the relative loss of protein during abstention from food is greatest for the liver. During a seven day fast the livers of rats lose 40 per cent of their protein, as compared to a loss of 20 per cent for the kidneys, 8 per cent for muscle, skin and skeleton and 0 per cent for the eyes, testicles and adrenals.[5] Deposit protein in the liver is apparently not made of any particular protein fraction. The studies of Luck[4] show that all the liver proteins, including albumin, euglobulin and pseudoglobulin, participate equally in the function of storage. It has been claimed, however, that storage protein can be differentiated microscopically from structural protein, the former having a droplet structure in the liver cells.[6] The importance of the protein stores of the body is becoming increasingly appreciated. The reserve protein helps to

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protect the liver against injury by toxic agents. Thus, twenty minutes of chloroform anesthesia are usually fatal to protein depleted dogs, while well fed animals tolerate one hour of anesthesia with little injury to the liver.[7] The experimental hepatic cirrhosis which is produced in rats fed a low protein diet and given dilute alcohol to drink for a protracted period may be prevented if the amount of protein in the diet of the animals is increased.[8] These examples are typical of a large number of comparable observations. Reserve stores of protein are important. The role played by the liver in this connection adds one more function to the long list of functions known to be performed by this organ. The observed relationship between an inadequate amount of dietary protein, the consequent low protein reserve and enhanced susceptibility to hepatic injury by a variety of toxic agents is noteworthy.

B VITAMINS IN CANCEROUS TISSUES

The occurrence of the vitamins of the vitamin B complex in all forms of living matter constitutes a strong presumptive evidence of their essential nature for the fundamental vital processes. It has been demonstrated that riboflavin plays a part in cellular oxidation. Warburg showed that the oxidation processes in cancerous tissues differed significantly from those in noncancerous tissues. Investigators at the University of Texas Biochemical Institute determined the distribution of the enzymes concerned with cellular oxidations in different types of cancer in an attempt to evaluate the significance of the results in terms of the transformation to the cancerous condition. Pollack and his associates [1] made riboflavin assays on a variety of human and animal tumors and on noncancerous tissues. Most of the cancers were found to contain about 2 to 3 micrograms of riboflavin per gram of moist tissue, the lowest value being 1.1 and the highest 7.4. The riboflavin content of cancers appears to be of about the same order of magnitude as those of brain, lung, spleen and muscle, and much below those of liver, heart and kidney. Noncancerous tissues require nicotinic acid for their essential functions, but little is known about the requirements of cancerous tissue. Taylor and his co-workers [2] found that in noncancerous tissue the nicotinic acid content amounted to 18 to 178 micrograms per gram of fresh tissue, while the range for the cancerous tissue was from 13 to 59 micrograms per gram, with most of the values between 18 and 29 micrograms per gram. They therefore conclude that the transformation to the cancerous state involves a decrease in nicotinic acid content. Whether this signifies low utilization of this vitamin or low storage capacity and efficient utilization is not clear. The comparative constancy of the vitamin level in tumors may be an indication of the essential nature of the vitamin for cancer metabolism. Biotin has considerable interest as a possible essential catalyst for cancerous processes. Pollack and his co-workers [3] found that the biotin content of cancerous tissue was never as high as that of kidney or liver and mostly was lower than that of heart. The biotin level of cancerous tissue appeared to be approximately of the same order as that of brain, lung, spleen and muscle. In the case of hepatoma induced by p-dimethylaminoazobenzene the cancer contained much less biotin than the control tissue. None of the cancers studied can therefore be classified as a biotin rich tissue. Cancers apparently neither particularly require nor are associated with a high biotin content. Investigations by Taylor and his co-workers [4] into the role of pantothenic acid demonstrated that a large drop in vitamin content occurs in the transformation of rat liver to hepatoma by feeding p-dimethylaminoazobenzene. Almost all the human and rat cancers contained about the same amount of pantothenic acid as did noncancerous spleen, lung and skeletal muscle, which are decidedly poorer in this factor than liver, heart, kidney and brain. The results indicate that cancerous tissues probably do not have any greater need for pantothenic acid than do noncancerous tissues.

FLUCTUATIONS IN HYPERTENSION

Extreme fluctuations of the blood pressure may occur without drug intervention. E. V. Allen,[1] who has studied for years the effect of drugs on blood pressure, expresses skepticism about the enthusiastic reports on certain preparations. Factors which produce enthusiasm include "(1) failure of recognition by those who report favorably that the blood pressure of most hypertensive subjects varies greatly and (2) failure of recognition by those who report favorably of the nonspecific effect of any kind of treatment." A third factor may be a difference in the genesis of the hypertension of different groups studied. Fluctuation of blood pressure in hypertension, if presented in terms of interpretation that result in reporting the highest figure observed before treatment and the lowest figure after treatment, will give credit to any medicament, even a placebo of distilled water. Because anxiety will increase blood pressure, the reassurance of repeated conferences with a physician may result in a reduction of pressure that cannot be ascribed to a specific remedy. In presenting criteria for the evaluation of any form of therapy, the author differentiates between hypotensive effects and relief of symptoms; many methods relieve the latter. If these criteria were followed, the author asserts, "those who treat hypertension would be freed of the state of constant confusion which now exists."

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MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.

TUBERCULOSIS CONTROL PROGRAM OF THE U. S. PUBLIC HEALTH SERVICE

SURGEON GENERAL THOMAS PARRAN
U. S. Public Health Service

Recognizing the special threat of tuberculosis during wartime, the United States Public Health Service established an Office of Tuberculosis Control shortly after war was declared. Although there has been no apparent increase in the amount of tuberculosis in this country, the objective circumstances favoring such an increase are much in evidence. Particularly is this true in the many congested war areas.

In addition to maintaining general standards of health and medical care, there are certain specific measures which can be undertaken to prevent a wartime rise in tuberculosis incidence and fatality. These are defined in the objectives of the Office of Tuberculosis Control:

1. Chest x-ray examination of workers in war industries, with follow-up of newly discovered cases by state and local health departments.

2. Extension of this service to families of war workers found to be tuberculous.

3. Extension of the case finding program of the armed forces to include all recruits of the Coast Guard.

4. Development of a workable system by which cases of tuberculosis discovered in rejected recruits will be reported promptly to state and city health departments in order that immediate clinical examination, treatment and other care may be provided within the limits of available local resources.

5. Encouragement and assistance in the establishment of chest x-ray examination procedures in the admitting rooms of general hospitals and state hospitals for the mentally ill.

6. At the request of state and municipal health departments, rapid inventory of existing control programs, and assistance in the reorganization of such programs in accordance with wartime needs.

At the present time the Public Health Service has eight 35 mm. photofluorographic units in operation in war industries. In assigning the units, special attention is given to the needs of shipyards, ordnance plants, air depots and other essential establishments where no facilities for chest x-ray examinations are available. The small film units are lent to state health departments for a limited time, primarily to demonstrate the need for such services, to get local programs started and to train local personnel. Industrial concerns are encouraged to procure their own equipment and personnel for carrying on the work permanently.

Each unit consists of a medical officer, a technician, a clerk and complete equipment for exposing and processing from three hundred to five hundred small films per eight hour day. The equipment can be used continuously, three shifts a day, when sufficient personnel is available.

The Public Health Service also has two 4 by 5 inch units available for special projects.

In cooperation with the District of Columbia Health Department, one of the small film units is being used in Washington, D. C., to make chest x-ray films of government employees. In the first survey of 5,404 employees in one agency, 66 cases of reinfection tuberculosis were discovered by x-ray examination, including 42 minimal, 22 moderately advanced and 2 far advanced cases. Positive cases are reported immediately to the family physician and local health department for clinical study, determination of activity, and disposition. It is hoped that during the coming year additional units will be provided to enable the Public Health Service to examine large numbers of government employees.

Orders have just been placed for ten additional small film units, and necessary personnel is being recruited. With twenty units in full operation during 1943, it is hoped that two million chest x-ray examinations will be made by the Public Health Service in cooperation with state health departments.

A consultation staff of part time and full time specialists in the fields of tuberculosis and roentgenology is being developed for service to state and municipal health departments during 1943. The full time consultants, who will be commissioned officers, will make careful inventories of each state program and assist in developing plans to provide care for cases of tuberculosis newly discovered as a result of surveys in industries, war industry communities and routine chest x-ray screening of recruits by the armed forces. Immediate plans include the employment of a specialist in medical records who will analyze control activities on the federal, state and local levels and assist the states in developing adequate systems of follow-up records, which are essential for successful tuberculosis control.

The Office of Tuberculosis Control collaborates closely with the National Institute of Health in its research activities. Some of the material collected as a part of the service program will be used for research into administrative practices. Such close correlation of research and service should shorten the lag between research and the application of its results.

This office works in close cooperation with the Division of Industrial Hygiene of the National Institute of Health, and the National Tuberculosis Association.

Details of the program have been presented at the formal meetings of the national organizations of experts in the fields of tuberculosis and roentgenology.

The support and cooperation of these specialists have been earnestly solicited in order to achieve economy in the use of medical manpower and to avoid duplication of effort.

The increase in tuberculosis mortality in Great Britain is being carefully observed. A significant development was the announcement by the minister of health on Oct. 8, 1942 that he has authorized local health authorities to grant financial assistance to families while the bread winner is undergoing sanatorium treatment. This development will bear close watching, because sooner or later we must face the same social and economic problems in this country.

Consultation service to the states in inventory and reorganization of tuberculosis programs is already paying dividends in intensification of case finding among industrial workers and better utilization of limited facilities for inpatient and outpatient care and supervision.

Our principal task now is to extend tuberculosis control activities so as to cover the greatest number of people in the shortest possible time with all available governmental and voluntary resources and personnel.

In addition to preventing an expected rise in tuberculosis mortality during wartime, a foundation can be laid for a postwar program which will have for its ultimate objective the eradication of tuberculosis in the United States.

REPORT FROM RUSSIA

[NOTE.—*From Russia by cable comes this report of the Twenty-Fifth Anniversary Session of the All Union Institute of Experimental Medicine.*—ED.]

The Soviet Scientists' Antifascist Committee transmits a communication from Prof. Nikolai Grashchenko, corresponding member of the Academy of Sciences of the Union of Soviet Socialist Republics, reporting on the scientific session of the All Union Institute of Experimental Medicine (VIEM), held in Moscow on the occasion of the twenty-fifth anniversary of the great October Revolution. In this session the achievements of the institute in the course of the twenty-five years of Soviet power were summarized in twenty-seven papers. Some of the papers dealt with the problems of army medical service and requirements for protection of health in wartime.

A paper by Professor Vishnevsky and his colleagues demonstrated that certain theoretical concepts, when developed clinically, are effective in the treatment of thoracic, femoral and joint wounds. These were wounds of grave nature, requiring long treatment, frequently resulting in permanent crippling and having a high mortality. Correct surgical methods, local anesthesia and use of bandages soaked in Peruvian balsam have given good results in the treatment of serious lesions and in restoring the functions of the organs or the limbs involved. A clinic under the supervision of Vishnevsky gives surgical and medical treatment for serious cerebral and spinal wounds and injuries of the peripheral nerves. This clinic was the first to cooperate with field hospitals in testing the effectiveness of sulfonamide compounds in the treatment of cerebral injuries. We developed a number of original methods in the employment of these drugs, such as the 20 per cent emulsion made up of two or three of the sulfonamides, the streptocide, the sulfadine and the sulfathiazole. This clinic was first to carry out surgical and medical treatment of grave injuries to the spinal column and the spinal cord without encountering such complications as cystitis or bed sores.

The clinic of Professor Chetverikov did pioneer work in investigating pathogenic micro-organisms in cerebral injuries, particularly of the role of anaerobic infection and methods of combating it. Professor Sakharov developed a method of restoring function, particularly speech function, accompanying cerebral trauma. Prof. A. Luria, in charge of a branch clinic in the Urals, devised a method of surgical treatment of trauma to the peripheral nerves. Some conclusions based on more than 700 cases and more than 400 operations were made both for and against surgical methods of treatment. Dr. Iznatov of the same branch developed methods of restorative therapy for lesions of the peripheral nerves. Rational therapeutic methods, making allowance for residual functions of the upper extremities, secure restoration of motor function many times more rapidly than by physical therapy and curative gymnastics alone. Prof. M. Borovsky demonstrated on experimental material the significance of peripheral section of a nerve in genesis of dystrophic processes. Formation of ulcers in limbs and other trophic disorders are largely associated with a peculiar condition of peripheral section following injury to the nerve. Progression of a dystrophic process can be prevented by injection of 70 per cent alcohol into the distal section of the injured nerve. These data were confirmed by Professor Golub working in a military hospital in the rear. Professor Anokhin discussed results of his theoretical and clinical investigations of formol treated nerve used as a transplant to bridge large defects of injured peripheral nerves. He also reported on advances made in the treatment of causalgia.

Prof. A. Braunstein explained the mechanism of action of thiamine on pain. He studied also thiamine hypovitaminosis processes associated with lesions of the central and peripheral nervous system. These data demonstrate the exceptional therapeutic value of thiamine in the treatment of lesions of the cerebrum, the spinal cord and the peripheral nerves. Prof. M. Shemiakin discussed the mechanism of biologic action of vitamin K, which proved to be a powerful agent in increasing the prothrombin content of the blood and decreasing hemorrhages. Professor Smorodintsev reported on methods of early diagnosis of typhus as developed in his laboratory and based on concepts advanced before the war by Prof. V. I. Joffe of the Leningrad branch of the VIEM. He discussed also the specific prophylaxis of typhus. Professor Smorodintzev carried out an experimental and epidemiologic comparative study on three kinds of vaccines: original and modified vaccine, Duran sparrow vaccine successfully developed and introduced into practice by Professor Krontovsky, and the Cox vaccine. Of exceptional interest were two papers by Professor Petrishcheva on new insecticides in collaboration with an experimental chemotherapeutic prophylaxis of rickettsias. Petrishcheva made use of the immense vegetable resources of western Siberia and waste products of the coal industry to produce very powerful insecticides in the form of emulsions, solutions and powders against lice, bugs and other parasites which spread contagious diseases. In the second study Petrishcheva used lice as experimental object. She infected lice with rickettsias after having saturated them with sulfonamides. Chemotherapeutic effects were then studied.

Bacteriocytic and bactericidal substances were tested on a large scale as antiseptics in infectious diseases and in wound infections. Results of the studies were reported by Professor Ermoleeva. Dr. Chumakov proposed a rapid method of neurovirus encephalitis diagnosis. To prove the virus nature of encephalitis, neutralization reaction was previously used. This required, however, a great number of white mice, shortage of which is now felt, and considerable time—one to three weeks. Dr. Chumakov makes use of complement fixation as developed for diagnosis of some children's infections by Professor Joffe and for typhus by Professor Smorodintsev. This reaction proved extremely effective for rapid diagnosis and is accessible to city bacteriologic laboratories.

ARMY

MEDICAL OFFICERS AND ENLISTED MAN DECORATED FOR GALLANTRY

The War Department has announced the award of the Silver Star for gallantry in action at Sememi, New Guinea, on Dec. 7, 1942 to seven officers of the Medical Corps and one enlisted man of the Medical Department. The officers were decorated for caring for the sick and wounded and for working "courageously and fearlessly, entirely oblivious of his personal safety, while continually being bombed and strafed by enemy planes." The enlisted man was decorated for similar heroism and for special care which saved the life of an officer.

One of the officers honored was Major Lemuel E. Day, who died on Dec. 22, 1942. The Silver Star will be presented to his widow, Mrs. Lucille Day, who lives at 6142 North Kirkwood Avenue, Chicago.

The other officers cited are Major Parker C. Hardin, whose wife, Mrs. Catherine S. Hardin, lives at 701 Sixth Street, Charleston, Ill.; Major Herbert B. Shields Jr., whose father, Mr. Herbert B. Shields, lives at 1702 West Cherokee Street, Enid, Okla.; Capt. Lloyd W. Taylor, whose wife, Mrs. Dorris Taylor, lives at 631 O'Farrell Street, San Francisco; Capt. William F. Edwards, whose wife, Mrs. Lucy Edwards, lives at 615 Beharrell Avenue, New Albany, Ind.; First Lieut. Julius J. Gutow, whose father, Mr. Herman Gutow, lives at 5634 Maybury Grand, Detroit, and First Lieut. Nathan Brooks, whose wife, Mrs. Mary Brooks, lives at 19323 Sorrento Avenue, Detroit.

The enlisted man honored is Sergt. Frederick Kosak, whose mother, Mrs. Thekla Kosak, lives at 104-46 119th Street, Richmond Hill, Queens, New York City. After detailing his courageous care of the wounded, Sergeant Kosak's citation reads "Especially noteworthy was his care of Major Daniel K. Edwards, previously wounded in action, whom he covered with mattresses and whose life undoubtedly was saved thereby, as the hospital tent in which he lay was riddled with projectiles, many being killed and wounded.

HOSPITAL TRAINS

The Surgeon General of the Army in 1939 directed the planning division of his office to submit recommendations for suitable plans for modern hospital trains. According to Lieut. Col. Thomas N. Page, U. S. Army Medical Corps, in the February issue of *Modern Hospital*, the train that was designed comprised fifteen cars, including a ward car with thirty berths for patients, two ward cars with berths for 32 bed patients each, a standard dining car to feed 300 patients, a standard pullman to quarter the train detachment, standard pullman cars to provide berths and seats for 225 walking sick and wounded patients, a baggage car for supplies and office space for the surgeon. Six of these trains have been procured and are now in service, giving excellent results. The unit car has space for a kitchen, dressings room, dispensary, cook's quarters and officers' quarters. These trains are for use only in the zone of the interior and not in the communications zone. Trains for the communications zones must be made up in their entirety and be able to run on the various railroads encountered.

COUNTY SOCIETY HONORS ITS MILITARY MEMBERS

The Mecklenburg County Medical Society at Charlotte, N. C., honored its thirty members who are in the military forces of the country, January 5, by dedicating a plaque which bears their names. Dr. Parks M. King, who served as a captain in the medical department of the first world war, dedicated the plaque. Dr. King also served as a hospital steward in the Spanish-American War. Following the dedication, Capt. Samuel Hartman read a paper on jaundice and yellow fever vaccination, and Capt. Ed F. Hardman and Lieuts. F. L. Blair and Thomas A. Brady read a paper on orthopedic problems at the Station Hospital, Morris Field.

ARMY-NAVY E AWARD TO DAVIS AND GECK

Brig. Gen. Fred W. Rankin, chief consultant in surgery, Surgeon General's Office, U. S. Army, Washington, D. C., and President of the American Medical Association, on January 6 presented the Army-Navy E award to the management and several hundred employees of Davis and Geck, Inc., Brooklyn, manufacturers of sterile surgical sutures, in which work this company has specialized for more than a third of a century. The E award flag and lapel emblems to be worn by every employee of this company were accepted by Mr. B. F. Hirsch, general manager, on behalf of the management, and by Miss Ethel Bagley, on behalf of the employees, most of whom are women. Other speakers during the ceremonies were Comdr. P. T. Crosby of the U. S. Navy Medical Corps, Hon. John Cashmore, president of the borough of Brooklyn, and D. L. Tilly, president of the Chamber of Commerce of Brooklyn.

PROFESSOR HERMS CALLED TO ACTIVE DUTY

Prof. William B. Herms, head of the division of entomology and parasitology at the University of California, has been called to active duty and assigned to teach tropical medicine at the Army Medical Field Service School, Carlisle Barracks, Pennsylvania. Professor Herms has been a reserve officer for many years and now holds a commission as a lieutenant colonel in the Sanitary Corps.

THE DARNALL GENERAL HOSPITAL

The Darnall General Hospital, situated on Herrington Lake between Boyle and Mercer counties in Kentucky, was leased from the state government by the War Department in July 1941 for the care and treatment of the mentally ill in the military service. Construction work on the new building began on July 29, 1941 and was finished on Jan. 27, 1942.

The present bed capacity is 272, and a 520 bed expansion is already under construction which should be finished by the end of the month. The main building is a six story reinforced concrete and brick structure designated for the care of 250 mental cases. The expansion consists of six permanent brick structures that will care for 480 additional mental cases, and one 40 bed ward for duty personnel.

The hospital has been named in honor of the late Carl R. Darnall, brigadier general, a distinguished officer of the Medical Corps. The administrative and professional staff consists of the following officers:

Col. Cleve C. Odom, commanding officer.
Lieut. Col. John D. Lamon Jr., executive officer and chief of the surgical service.
Lieut. Col. Theodore C. C. Fong, chief of the neuropsychiatric service.
Major James P. Sullivan, chief of the medical service.
Major Joseph R. Vivas, administrative and personnel officer and chief of x-ray.
Major Charles E. Nixon, assistant chief of neuropsychiatric service.
Major William R. Galt, post engineer.
Capt. O. B. McAtee, registrar and receiving and evacuation officer.
Capt. Maurice Lev, chief of laboratory service.
Capt. Ira P. Burdine, assistant, surgical service.
Capt. Marvin A. Cox, chief of dental service.
Capt. Ned Feldman, post exchange officer.
Capt. Robert P. Kemble, ward officer.
Capt. Robert D. Ralph, chief of eye, ear, nose and throat section.
Capt. Dayton D. Salon, ward officer.
Capt. William L. Sharp, ward officer.
Capt. George F. Sutherland, ward officer.
Capt. Wylie F. Steen, chaplain.
Capt. Rondell H. Tanner, assistant, medical service and hospital inspector.
Capt. Edward S. Tauber, ward officer.
Capt. William C. Taylor, medical supply officer.
1st Lieut. Lester L. Burtnick, ward officer.
1st Lieut. Michael B. Dunn, psychology consultant.
1st Lieut. Harry F. Forsey, quartermaster officer.
1st Lieut. Joe E. Lane, CO, Det., medical department.
1st Lieut. Charles L. Meistroff, assistant, dental service.
1st Lieut. J. Lloyd Morrow, ward officer.
1st Lieut. Victor H. Rosen, ward officer.
1st Lieut. Herman M. Serota, ward officer.
1st Lieut. E. M. C. Stamm, finance officer.
2d Lieut. Raymond W. Beagles, CO, Det. of patients.
2d Lieut. Glenn F. Bock Jr., director of dietetics.
Mr. Arthur L. Wilson, chief warrant officer.

AVIATION MEDICAL EXAMINERS

The fifth class in aviation medicine for Aviation Medical Examiners to be graduated under the system of training whereby the didactic portion of the course is conducted at the School of Aviation Medicine in Texas and the practical portion at three army air forces classification centers was graduated on Dec. 17, 1942. Graduation exercises were held at each of the three centers. The list of graduates follows:

ALABAMA

Cecil Howell Blackburn, 1st Lieut., Birmingham
Lamb Bolton Myhr, 1st Lieut., Birmingham
John Carey Patterson, 1st Lieut., Tuscaloosa
Lance Charles Price, 1st Lieut., Florence

ARIZONA

Sterling P. Hoffmann Jr., 1st Lieut., Tucson

ARKANSAS

Jim McKenzie, 1st Lieut., Hope
James Otto Pierce, 1st Lieut., Marked Tree
Hugh Walter Savage, 1st Lieut., Little Rock

CALIFORNIA

Nicholas Edward Bailey, 1st Lieut., Manhattan Beach
Lewis Claude Blackburn, 1st Lieut., Santa Barbara
Leland Bowman Blanchard, 1st Lieut., San Jose
William Guerin Bradley, 1st Lieut., Los Angeles
Arthur Horace Buell, 1st Lieut., Long Beach
Vincent Michael Downey, 1st Lieut., Oakland
James Timmons Dresser, 1st Lieut., Bakersfield
James Edward Feldmayer, 1st Lieut., Clovis
Levon K. Garron, 1st Lieut., Piedmont
Chester Randolph Goddard, 1st Lieut., Orange
Victor Adam Herrmann, 1st Lieut., Los Angeles
Cecil Wayne Hoff, 1st Lieut., San Bernardino
Harve William Jourdan Jr., 1st Lieut., Los Angeles
Robert Francis Kelly, 1st Lieut., Los Angeles
Michael Michaels Mikita, 1st Lieut., Oakland
Marco Robert Rago, 1st Lieut., Los Angeles

COLORADO

Robert Rehm, 1st Lieut., Colorado Springs

CONNECTICUT

Donald A. Davis, 1st Lieut., Danbury
William Ernst Furniss, 1st Lieut., West Hartford
William Peter Goergen, 1st Lieut., Danbury
Charles William Neuhardt, 1st Lieut., New Hartford
Coles Walker Raymond, 1st Lieut., Litchfield
William Moses Schubert, 1st Lieut., New Britain

DELAWARE

James Richard Durham Jr., 1st Lieut., Wilmington

DISTRICT OF COLUMBIA

Theodore C. Bedwell Jr., Major, Washington
Joseph Aloysius Dugan, 1st Lieut., Washington
John Harry King Jr., Major, Washington
Henry Joseph Wegrocki, 1st Lieut., Washington
Claude Benjamin White, Major, Washington

FLORIDA

Daniel H. Funkenstein, 1st Lieut., Jacksonville
Elwin Gilmore Neal, 1st Lieut., Jacksonville
James Robert Nieder, 1st Lieut., Delray Beach
Donald George Stannus, 1st Lieut., Miami Beach
Norman H. Steiner, 1st Lieut., Tampa
Dale Sloan Wilson, Captain, Miami

GEORGIA

William Kendall Jordan, Captain, Macon
William Colbert Phillips, 1st Lieut., Richland

IDAHO

Wilford William Beck Jr., 1st Lieut., Blackfoot

ILLINOIS

Charles E. Ahlm, Captain, Chicago
Edwin Francis Baker, 1st Lieut., Ashton
Bernard Everette Cohler, 1st Lieut., Chicago
William Cooley Jr., Captain, Peoria
Chester Cochran Doherty, Major, Chicago
Robert Chatterton Fringer, Captain, Rockford
Jack Tilden Haskins, 1st Lieut., Glencoe
Clarence Vernard Hodges, 1st Lieut., Chicago
Francis John Hultgen, 1st Lieut., Chicago
David Elmer James, 1st Lieut., Belvidere
George Peter Kaplan, 1st Lieut., Chicago
George Jerome Kvidera, 1st Lieut., Chicago
Harold Thomas Lawler, 1st Lieut., Peoria
Howard James McNally, 1st Lieut., Chicago
Charles Louis Noggle, 1st Lieut., Chicago
Donald Herbert Root, Captain, Quincy
John Bernard Roth, 1st Lieut., Morris
Alfred George Schultz, 1st Lieut., Jacksonville
Tommy Richard Young, Captain, Mount Carmel

INDIANA

Ralph Emory Barnett, 1st Lieut., Peru
John Edward Fisher, 1st Lieut., Clarksburg
Lloyd Markham Headley, 1st Lieut., Lebanon
Emory Brisco Lett, 1st Lieut., Loogootee
Joseph Douglas McDonald, 1st Lieut., Evansville
Jack McKittrick, 1st Lieut., Washington
Robert Wright Owsley, Captain, Hartford City
James Gaylord Shanklin, 1st Lieut., Hammond
William Clayton Stafford, 1st Lieut., Plainfield
Daniel Cody Tweedall, 1st Lieut., Evansville
William John Warn, 1st Lieut., Milan
H. Haskell Ziperman, 1st Lieut., Indianapolis

IOWA

Vail, Burdette Adams, Captain, West Burlington
Clemmet Willroth Byrnes, Captain, Dunlap
Kenneth Marshall Lemon, 1st Lieut., Council Bluffs
Robert Lee Sells Jr., 1st Lieut., Iowa City
David Forrest Shaw, Captain, Britt
Orville Donald Thatcher, 1st Lieut., Fort Dodge
Paul Edward Tramp, 1st Lieut., Audubon

KANSAS

John Aldis, 1st Lieut., Emporia
Guy William Cramer, 1st Lieut., Parsons
Archie Fea Dougan, 1st Lieut., Kiowa
Cecil Edward Petterson, Captain, Topeka
Francis Adams Thorpe, 1st Lieut., Pratt

KENTUCKY

Frank Krenning Bosse, 1st Lieut., Atchison
Max Costlin, Captain, Louisville
Morton Atherton Cundiff, 1st Lieut., Somerset
Leo Esbin, 1st Lieut., Evarts
Samuel Glenn Marcum, 1st Lieut., Irvine
Charles Barbour Wathen, 1st Lieut., Morganfield
Richard Hunt Weddle, 1st Lieut., Somerset

LOUISIANA

Sam Fliss Hartman, 1st Lieut., New Orleans
Ford J. MacPherson, 1st Lieut., Baton Rouge
Oran Vincent Prejean, 1st Lieut., New Orleans
Herman Rabinowitz, 1st Lieut., New Orleans
Eugene Sullivant Rogers, 1st Lieut., New Orleans
James Wallace Schonlau, 1st Lieut., Winnfield
Max Suter, 1st Lieut., New Orleans
James William Vaudry, Captain, (N. G.), Thibodaux
William Benjamin Wiener, 1st Lieut., New Orleans
Everett John Witt, 1st Lieut., New Orleans

MAINE

Kenneth Alexander Laughlin, 1st Lieut., Portland

MARYLAND

Arnold Lewis Field, 1st Lieut., Baltimore
Milton Gusack, 1st Lieut., Chevy Chase
Joseph Marshall Keith, 1st Lieut., Baltimore

MASSACHUSETTS

Alfred Walter Basamania, 1st Lieut., Holyoke
Harold Broady, 1st Lieut., Lowell
George William Geiss, 1st Lieut., Arlington
Roger Dolor Hebert, 1st Lieut., Chicopee
William McKendree Jefferies, 1st Lieut., Boston
Edward F. Lawler, 1st Lieut., Lawrence
Walter Ovid McCammon, 1st Lieut., Boston
Howard Nelson Simpson, 1st Lieut., Longmeadow

MICHIGAN

William H. Anderson, Captain, Ewen
John Birge Byers, 1st Lieut., Grand Rapids
Vincent H. Carstensen, 1st Lieut., Detroit
Louis Elmer Doerr Jr., 1st Lieut., Detroit
Lewis Jennings Geerlings, 1st Lieut., Fremont
Robert M. Heavenrich, 1st Lieut., Saginaw
William Ramsey Kavanaugh, 1st Lieut., Kalamazoo
Jerry Hal McNickle, 1st Lieut., Detroit
Richard Louis Rapport, 1st Lieut., Flint
Edward George Seybold, 1st Lieut., Ann Arbor
Ralph Hunt Sullivan Jr., 1st Lieut., Lansing
Franklin Lyle Watters, 1st Lieut., Detroit

MINNESOTA

Wallace G. Beckman, 1st Lieut., Minneapolis
Frederick Martin Graham, 1st Lieut., Rochester
John William LaBree, 1st Lieut., Minneapolis
Duncan Voss Luth, 1st Lieut., Duluth

MISSISSIPPI

James Eddy Coe, 1st Lieut., Leland
Albert Frederick William Habeeb, 1st Lieut., Vicksburg
Edmund Arthur Melvin, 1st Lieut., Gulfport
John Andrew Murfee, 1st Lieut., Amory

MISSOURI

William Bayne Allen, 1st Lieut., Kansas City
Walter Baumgarten Jr., 1st Lieut., St. Louis
James Clinton Cope, 1st Lieut., Lexington
Charles Holloway Lewellen, 1st Lieut., Kansas City
Warren M. Lonergan, Captain, St. Louis

NEBRASKA

Vernon Krueger Anderl, 1st Lieut., David City
William Paul Ward, 1st Lieut., Lincoln

NEVADA

Lin Shecut Felder, 1st Lieut., Winnemucca

NEW HAMPSHIRE

Edward Donald Asselin, Captain, Nashua

NEW MEXICO

Leslie Louis Daviet, 1st Lieut., Las Cruces

NEW JERSEY

Dominic Donald Borrella, 1st Lieut., Trenton
Charles Pluemer Campbell, 1st Lieut., Westfield
Maxwell Xavier Colby, Captain, Long Branch
Vincent Gregory Fay, Captain, Layton
Morris Gottlieb, Captain, Ventnor
Angelo Bartholomew Iannone, Captain, Orange
Charles Lester Ringe, 1st Lieut., Teaneck
John R. Ross, Captain, Jersey City

NEW YORK

Harry Ageloff, 1st Lieut., New York
Ralph Edmond Baxter, 1st Lieut., Brooklyn
Floyd Maurice Breed, 1st Lieut., Norwick
John A. Cooke Jr., 1st Lieut., Monticello
James Edward Corrigan, 1st Lieut., Patchogue
Joseph B. Cramer, 1st Lieut., Rochester
Joseph Charles Elia, 1st Lieut., Niagara Falls
Cortez Ferdinand Enloe Jr., 1st Lieut., New York
Roland L. Faulkner, 1st Lieut., Schenectady
Dayton R. Griffith, Captain, Dolgeville
William Hildebrand Jr., 1st Lieut., Kenmore
Frank Charles Hoak Jr., Captain, Niagara Falls
Russell Houghton Hooker, 1st Lieut., New York
Maurice Joseph Keller, 1st Lieut., New York
Robert Landesman, 1st Lieut., New York
Manuel Phillip Landman, 1st Lieut., Brooklyn
George Harold Kojac, 1st Lieut., New York
Merny M. Laster, 1st Lieut., Brooklyn
Howard Robert Lawrence, 1st Lieut., Medina
Kenneth Bedell Lewis, 1st Lieut., Rockville Centre
John King Lucey, 1st Lieut., Staten Island
Francis Dunn Maloney, 1st Lieut., Hempstead
John R. Murphy, Captain, Saranac Lake
Paul J. O'Connor, 1st Lieut., New York
Stanley Frank Ogorzaly, 1st Lieut., Yonkers
Laurence Louis Palitz, 1st Lieut., New York
Clarence O. Peterson Jr., 1st Lieut., Mount Vernon
John Brice Plass, 1st Lieut., Poughkeepsie
John Archibald Rodger, 1st Lieut., Moravia
Woodrow Wilson Schier, 1st Lieut., Manhasset
Irving Ernest Sisman, 1st Lieut., New York
Harold Lawrence Sutton, 1st Lieut., Hempstead
Charles H. Thom Jr., 1st Lieut., Staten Island
Harry Randall Tollefsen, Captain, New York
John Joseph Van Buren, Captain, Brooklyn
John M. VanderLinde, 1st Lieut., Brooklyn

Harold S. Wadro, Captain, New York
Joseph Allison Cannon Wadsworth, 1st Lieut., New York
Albert Leopold Wahl, 1st Lieut., Mount Vision
Robert Edward Walton, 1st Lieut., Kenmore
Ernest Alfred Weymuller, Captain, Flushing
Clifford Carmichael Wray, Captain, Rockville Centre

NORTH CAROLINA

William Frederick Barefoot, 1st Lieut., Wilmington
James Verdery Greene, 1st Lieut., Fayetteville
William Hugh Patton Jr., 1st Lieut., Morganton
Charles Walton Purcell, 1st Lieut., Raleigh
Benjamin Anderson Strickland Jr., Major, Whitakers
Rufus H. Temple, Captain, Kinston

NORTH DAKOTA

George Savage Boyer, 1st Lieut., Grand Forks

OHIO

Archibald Maus Adams, 1st Lieut., Lima
George Davis Beamer, Captain, Cincinnati
Lloy DeForest Bonar, 1st Lieut., Mansfield
Harry Bremen, 1st Lieut., Dayton
Alexander Sand Fisher, 1st Lieut., East Liverpool
Ralph Milton Gignac, 1st Lieut., Dayton
Robert Carl Haubrich, 1st Lieut., Pataskala
James Ralph Janney, 1st Lieut., North Baltimore
Edward Tracey Keating, 1st Lieut., Hamilton
George Weston LeSar Jr., 1st Lieut., Cleveland
Theodore Long Light, Captain, Dayton
Lawrence Joseph Lohr, Captain, Dayton
Meyer Nathan Margolis, Captain, Cincinnati
Harold Maurice Messenger, 1st Lieut., Cleveland
William Jones Neal, 1st Lieut., Archbold
George Fred Nisius, 1st Lieut., Cleveland
Earl William Schafer Jr., 1st Lieut., Cincinnati
Julius Paul Schweitzer Jr., Captain, Lakewood
Harold Eugene Snedden, 1st Lieut., Zanesfield
Walter Raymond Stager, Captain, Dover
Gwyn Harrison Start, 1st Lieut., Toledo
James Walter Tirey Jr., 1st Lieut., Anna
Carl Fredrick Wagner, Captain, Cincinnati
Marlin Richard Wedemeyer, 1st Lieut., Oak Hill
Russel Lee Roy Wiessinger, 1st Lieut., Sidney
Paul Bernard Winston, 1st Lieut., Cincinnati

OKLAHOMA

Herman Robert Bender, 1st Lieut., Norman
Samuel Richard Fryer, 1st Lieut., Oklahoma City
William Ecton Hubbard, 1st Lieut., Oklahoma City
Jesse Day Shipp, 1st Lieut., Tulsa
Cyrus Lee Worrall, 1st Lieut., Oklahoma City

OREGON

Richard Lester Currin, 1st Lieut., Klamath Falls
William Wilmer Ornduff, 1st Lieut., Portland

PENNSYLVANIA

Edward Andrew Agnew, 1st Lieut., Reading
James R. Bell, Captain, Canonsburg
Kenneth Wells Benjamin, 1st Lieut., Philadelphia
Douglas Danford Bond, 1st Lieut., Bryn Mawr
Max Cassell, Captain, Philadelphia
Frank Edward Check, 1st Lieut., Wilkes-Barre
Earl David Cramer, 1st Lieut., Latrobe
George Winton Crouse, 1st Lieut., Smithton
Francis Joseph Ditchey, 1st Lieut., Tamaqua
Stuart Watt Dittmar, 1st Lieut., Chambersburg
Howard Renninger Erb, 1st Lieut., Swarthmore
Irving Alfred Glass, 1st Lieut., Philadelphia
Rudolph Karl Glocker, Captain, Royersford
Burton Adam Hall, 1st Lieut., Philadelphia
Earl Francis Harris, 1st Lieut., Connellsville
Frederick Guy Holt, Captain, Shamokin
Donald Hayden Huffer, 1st Lieut., York
William A. Johnson, Captain, Uniontown
Samuel Newton Kelso Jr., 1st Lieut., Lewistown
William Patton McKnight, Captain, Philipsburg
Smith Davis Morton, Captain, Pittsburgh
William Pearlman, 1st Lieut., Kingston
Paul John Poinsard, 1st Lieut., Dalton
James Hawthorne Ramsey, 1st Lieut., Marietta
George Louis Seifert, 1st Lieut., Philadelphia
Alan Eugene Smith, 1st Lieut., Shrewsbury
William Ross Stewart, 1st Lieut., Pittsburgh
Theodore Roosevelt Whitaker, 1st Lieut., Sewickley
Henry Abram Zimmerman, 1st Lieut., Hollsopple

SOUTH CAROLINA

Emory Clifton Kinder, 1st Lieut., Kingstree
Raymond Hudson Yunk, Captain, Charleston

SOUTH DAKOTA

Charles Garmire Hoyt, 1st Lieut., Sioux Falls

TENNESSEE

James Edward Anhalt, 1st Lieut., Memphis
William Kenneth Tilley, 1st Lieut., Lebanon
Alvin B. Tripp, 1st Lieut., Memphis

TEXAS

Walter Billie Adams Jr., Captain, Wichita Falls
Joseph Canipelli, 1st Lieut., San Antonio
Cecil Hanod Dickerson Jr., 1st Lieut., San Antonio
Bates Ballew Estes, 1st Lieut., Corpus Christi
Daniel Emory Hampton, Captain, Kaufman
Ralph Franklin Hartman, 1st Lieut., San Antonio
Martin Peters Hunter, Major, Waco
Ridings, Edward Lee, Captain, Dallas
Carey Legett Jr., 1st Lieut., Port Lavaca
James Edward Lett III, 1st Lieut., Dallas
Edward Kernaghan Mills, Captain, Dallas
Weldon O. Murphy, 1st Lieut., Amarillo
Charles W. Norvell, 1st Lieut., Temple
Robert Madison Rothen, 1st Lieut., Austin
William M. Routon, 1st Lieut., Kilgore
Fred William Sellers, Captain, Houston
Oliver H. Timmins Jr., 1st Lieut., San Antonio
Thelbert Ruyle Wilson, 1st Lieut., Liberty
Eduardo Ximenes, 1st Lieut., Floresville

UTAH

John William Pace, 1st Lieut., Salt Lake City
James Bradford Westwood, 1st Lieut., Provo

VERMONT

Sanford Raphael Bloomenthal, Captain, Burlington
Carlton Bond Orton, 1st Lieut., Waterbury

VIRGINIA

Herbert Clifton Allen Jr., 1st Lieut., Richmond
Warren Alfred Colton, 1st Lieut., Kecoughton
Pete Commings, 1st Lieut., Charlottesville
Maynard Robert Emlaw, 1st Lieut., Charlottesville
Alfred Randolph Garnett, 1st Lieut., Norfolk
John Tabb Walke, 1st Lieut., Richmond

WASHINGTON

William Sebern Butts, 1st Lieut., Spokane
Gordon Hall Congdon, 1st Lieut., Wenatchee

WEST VIRGINIA

Keith Elmer Gerchow, 1st Lieut., Morgantown
John Stafford Rogers, 1st Lieut., Keyser

WISCONSIN

Robert J. Brown Jr., 1st Lieut., Cazenovia
Thomas L. Calvy, 1st Lieut., Fond du Lac
William August Langmack, 1st Lieut., Milwaukee
James L. Murphy, 1st Lieut., Park Falls
Weston John Schutz, 1st Lieut., Shawano
Saul Fred Schwartz, 1st Lieut., Milwaukee

ALLIED ARMIES

Rene Delgadillo, Colonel, (Bolivian Army)
Marco Antonio Gaxiola, Major, (Mexican Army)

MISCELLANEOUS

PUBLIC HEALTH UNDER HITLER

The *Reiches-Gesundheitsblatt* of Oct. 14, 1942 contains under the heading "The Fight Against Disease" seven pages of "advice to doctors on combating the plague." (This "advice" has, according to the paper, also appeared in leaflet form and may be bought at 15 pfennig per copy from the Reichsverlagsamt, Berlin N.W. 40.) It describes in great detail the sources and known ways of spreading the infection and mentions southeastern Russia as one of the regions where plague infested rodents and in particular rats are to be found. From these endemic plague centers the disease may be carried by infected rats in freight trains and in ships to far distant countries. According to the hygienic conditions prevailing there and the numbers and kinds of rats imported, an epidemic will break out among rats with or without a transmission to man by way of fleas, and it may even come to the formation of a new and permanent endemic plague center. . . . In some regions, as for instance in southeastern Russia (Astrakhan), other rodents too may harbor the disease, as for instance field mice and ground squirrels.

After giving details of the various forms of the plague, such as the bubonic and pneumonic varieties, the article deals at length with prophylactic measures. It says that whenever possible the infected person should at once be removed to a hospital but, "if in exceptional cases a removal to a hospital should prove impossible, for instance if the hospitals are overcrowded during an extensive outbreak of the plague, the patient must at least be isolated and all unnecessary communications forbidden. Children from houses or families where a case of the plague has occurred must, if they have not been put into quarantine, be kept away from school, the Hitler Youth home and Hitler Youth service, as well as from all other children."

Klinische Wochenschrift, Berlin, of Oct. 24, 1942, in an article by Dr. Bruhl on disease of the stomach, says that "the army of sufferers from stomach diseases has greatly increased in this war. . . . As the cause for this increase in the numbers of patients suffering from stomach troubles we must not solely blame the diet (fresh dark bread, cabbage dishes, feeding in communal kitchens). General factors are just as important causes (overwork, vexations, irregular way of living and feeding, and so on). Thus to eliminate these extragastral harmful influences is an important therapeutic measure. . . . The intensive treatment of sufferers from stomach troubles is particularly important today, since valuable working hours are lost through their illness."

Nieuwsblad van het Noorden, Groningen, of Sept. 23, 1942 reports that henceforth a great number of medicines will be available only on prescription. Cod liver oil and eau de cologne are among others subjected to these regulations.

According to the *Deutsche medizinische Wochenschrift*, Leipzig, of July 31, 1942, to secure the necessary technical medical help for the armed forces and the civil population the planned distribution of all persons who have completed or are completing their training as technical helpers or assistants is necessary. According to a decree by the reich minister for the interior, applications for such personnel and their employment must be made solely through his ministry, which will work in collaboration with the Reich Employment Office for Female Vocations (Reichsvermittlungsstelle für Frauenberufe).

The *Zeitschrift für Urologie*, Berlin, 1942, contained an article by Dr. Droschl, who works in a surgical ward in a Grez hospital. He states that the increase in the cases of necessary and prescribed sterilization of men has resulted in a heavy extra burden of work for the hospital and made it necessary to simplify the operation. He then proceeds to give details of the operation.

The *Nieuwe Rotterdamsche Courant* of Sept. 17, 1942 reports that last May the Department of Social Affairs began an important extension of the scheme for medical service in the schools. For this purpose it was decided to divide the country into districts, each comprising one or more municipalities. This reorganization is at present in full swing. Much can be done in the already existing eleven districts for school medical service as well as in about thirty-five municipal school doctors' services.

It is intended that the school doctors should in future become full time officials. The district services will cover about forty to fifty thousand persons, which means that they will have to cope with an average of from six to seven thousand pupils in the kindergartens and the elementary, advanced elementary and technical schools.

At the University of Utrecht a special course of two months has been established for school doctors. Twenty to thirty-five doctors participated in the course this spring. The second course begins in the autumn.

The state is to bear one third of the costs involved in the school doctors' service. The state will also contribute one third of the costs if important improvements have to be made. The rest of the necessary funds must be raised by the municipalities and perhaps even by the provinces.

THE TRAINING OF AUXILIARY HOSPITAL WORKERS

According to an agreement reached in Washington early in January by the Subcommittees on Hospitals and Nursing of the Health and Medical Committee, Office of Defense Health and Welfare Services, the responsibility for employing and training auxiliary hospital workers rests with the individual hospital.

The subcommittees concerned with the coordination of wartime hospital and nursing administration decided that it is neither desirable nor practicable for the federal government to foster a training program for hospital auxiliary workers. Dr. James A. Crabtree, executive secretary of the Health and Medical Committee, said "We feel the problem to be entirely local."

Some professional groups have contended that the federal government should assume at least partial responsibility for training, placing and subsidizing auxiliary workers in hospitals. The series of conferences held over a period of months to weigh all angles of the proposal culminated in final action at a joint meeting of the hospital and nursing subcommittees on January 9.

CITRUS JUICES RESERVED FOR WAR REQUIREMENTS

Secretary of Agriculture Wickard issued an order, January 9, reserving for direct war requirements all citrus juices except unconcentrated grape fruit juice, which also cannot be sold by canners during the remainder of January, February and March, with civilian supplies of this product to be released by canners after this period. The purpose of this regulation is to insure adequate supplies of canned citrus products for government requirements and to conserve tin plate by requiring civilians to use most of these citrus fruits in fresh rather than in canned forms.

TWENTY FELLOWSHIPS IN PUBLIC HEALTH EDUCATION AVAILABLE

The W. K. Kellogg Foundation has made a grant of $40,000 available to the U. S. Public Health Service for the purpose of providing twenty fellowships in public health education, the training to be given at the University of North Carolina, Chapel Hill, beginning March 20, 1943 and continuing until March 1944. The summer quarter will be spent in the field. Successful completion of the studies will lead to a master's degree in public health.

Since a shortage of well qualified health education personnel prevails, these courses are being provided to hasten the time when trained personnel will be available.

The fellowships are open to American citizens between the ages of 19 and 40 and provide a stipend of $100 a month for twelve months, tuition fees and travel for three months of field experience. The applicant must pay his own travel to and from the university at the beginning and end of training. The minimum educational qualifications are:

(*a*) Bachelor of science degree, or its equivalent, from a recognized college or university, with major emphasis on:
  (1) The basic health medical sciences such as physics, chemistry, biology and physiology.
  (2) Education with emphasis on educational psychology.
  (3) The social sciences.

Persons interested who consider themselves qualified should mail their application for fellowship in health education, together with a transcript of their college credits and a small photograph, not later than March 1, to the Surgeon General, U. S. Public Health Service, Washington, D. C.

USE OF ROTENONE INSECTICIDE NOW RIGIDLY RESTRICTED

A new federal order has rigidly restricted the use of rotenone insecticides, which now may be used only on certain crops against certain insects. Rotenone has become in recent years a popular insecticide for farms, gardens and household use, but the former Far Eastern sources of supply have been cut off and only small supplies are coming from South America. Now the finished insecticide must not contain more than 0.5 per cent of rotenone and must not contain any pyrethrum. Any one at the end of 1942 who had more than 500 pounds of rotenone or 5,000 pounds of rotenone insecticide must report to the War Production Board. Dealers must label or tag all packages sold with a statement of the permitted uses, and every one involved must preserve for two years complete records of all rotenone handled. Besides certain vegetables, the only other permitted use is on cattle against the cattle grub or short nosed cattle louse. The vegetable uses permitted are on peas against pea weevil and pea aphid, on beans against Mexican bean beetle, on sweet corn against European corn borer, and on broccoli, brussels sprouts, cauliflower, kohlrabi, mustard, kale, turnips and collards for caterpillars and aphids.

ANALYST FOR THE LEND-LEASE ADMINISTRATION

Mr. M. R. Kneifl, executive secretary of the Catholic Hospital Association of the United States and Canada, St. Louis, has been granted a leave of absence by that association to enable him to accept the position of Principal Trade Requirements Analyst for the Lend-Lease Administration. The Rev. Alphonse M. Schwitalla, president of the Catholic Hospital Association, announced that the services of Mr. Kneifl were requested by Mr. Edward R. Stettinius Jr., administrator of the Office of Lend-Lease Administration.

CALIFORNIA STATE GAS OFFICER

Dr. Maurice L. Tainter, professor of pharmacology at Stanford University School of Medicine, San Francisco, has been named state gas officer for California by the state council of defense emergency medical service. Dr. Tainter set up the San Francisco gas treatment and protection services for civilian defense.

ORGANIZATION SECTION

OFFICIAL NOTES

COMMITTEE ON STUDENT HEALTH, AMERICAN MEDICAL ASSOCIATION

The Committee on Student Health held its first meeting at Washington, D. C., January 11 and 12. All members of the committee were present:

Dr. Joseph E. Raycroft, Princeton, N. J., Chairman.
Dr. Ruth E. Boynton, University of Minnesota, Secretary.
Dr. Arlie C. Bock, Harvard University.
Dr. Frank B. Kelly, University of Illinois.
Dr. O. N. Anderson, Stanford University.

Dr. W. W. Bauer, American Medical Association staff, met with the committee.

The committee met first in the office of Col. Leonard G. Rowntree, chief of the Medical Division of Selective Service, and conferred briefly with Major Gen. L. B. Hershey, director of Selective Service. The committee was entertained at luncheon in Selective Service headquarters in order to meet the following representatives of various government services and other guests, who were as follows:

Major Gen. L. B. Hershey, Selective Service director, Washington, D. C.
Col. George Baehr, Medical Division U. S. Office of Civilian Defense, Washington, D. C.
Col. A. N. Baggs, Medical Division, National Headquarters, Washington, D. C.
Col. Theodore P. Bank, Special Service Division, War Department, Washington, D. C.
Col. Lawrence W. Long, state director, Mississippi Selective Service System, Jackson, Miss.
Col. L. G. Rowntree, chief, Medical Division, Selective Service, Washington, D. C.
Col. C. R. Wells, National Headquarters, Selective Service System (chief, Dental Section), Washington, D. C.
Lieut. Col. Louis H. Renfrow, Dental Section, National Headquarters, Washington, D. C.
Douglas D. Finch, New York State War Council (Photographic Section), Albany, N. Y.
Ernest J. Jaqua, War Manpower Commission, Washington, D. C.
Hiram A. Jones, director, Office of Physical Fitness, New York State War Council.
Frank S. Lloyd, Federal Security Agency (Division of Physical Fitness), Washington, D. C.
Harlan G. Metcalf, Federal Security Agency (Division of Physical Fitness), Washington, D. C.
Watson D. Miller, Assistant Administrator Federal Security Agency, Washington, D. C.
Robert H. Owens, Selective Service Headquarters, Washington, D. C.
C. G. Parker Jr., Selective Service, Washington, D. C.
J. R. Sharman, Office of Education, Washington, D. C.

An informal discussion of physical fitness and health was held during and after luncheon. Hiram A. Jones, director of the Office of Physical Fitness of the New York State War Council, showed a motion picture film descriptive of the statewide program in New York State.

After hearing from Colonel Rowntree and Mr. Metcalf of the Federal Security Agency, the committee spent the rest of the day and evening and the next day in discussing and surveying the possible scope of its activities and sources of information as to previous contributions in the field of student health. The following areas to be investigated by various members of the committee were assigned:

1. Information on height, weight and growth of college men and women of today compared with those twenty or more years ago.
2. An analysis and evaluation of physical fitness tests now in use.
3. Information on nutrition of children and standards of nutritional needs.
4. The status of health teaching in colleges, as well as the lower schools, and the results of pretesting of young people in the health field.
5. Information to show if possible the comparative health of the nation now and in previous years through the analysis of examinations of men for Selective Service, as well as other sources.

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bills Introduced.—H. R. 350, introduced by Representative Guyer, Kansas, proposes to prohibit, within the District of Columbia, the manufacture, importation, exportation, transportation, sale, gift, purchase or possession of any spiritous, vinous, malt, fermented and all alcoholic liquors whatsoever which may be used as beverages, except natural wine for religious services, and ethyl alcohol for compounding or manufacturing medicines for internal use and as a disinfectant by physicians, surgeons and dentists in their professions. H. R. 1567, introduced by Representative Bradley, Michigan, prescribes certain offenses relating to the keeping, injuring and destroying of dogs in the District of Columbia.

MEDICAL BILLS IN CONGRESS

Bills Introduced.—S. J. Res. 24, introduced by Senator Capper, Kansas, proposes a constitutional amendment to confer on Congress the power to make laws which shall be uniform throughout the United States on marriage and divorce, the legitimation of children and the care and custody of children affected by annulment of marriage or by divorce. S. 65, introduced by Senator McNary, and H. R. 497, introduced by Representative Angell, both of Oregon, provide for the payment of annuities to blind persons, in an amount not to exceed $50 per month in case a blind person has an income of less than $1,200 a year. S. 599, introduced by Senator Thomas, Oklahoma, provides that any tuberculous World War veteran whose disability compensation rating is service connected shall be rated as permanent and total for compensation purposes. S. 460, introduced by Senator Capper, Kansas, provides for the uniform regulation of marriage and divorce. Among other things, this bill proposes that no license to marry shall be issued to any person who is insane or an imbecile, pauper, epileptic, feebleminded or afflicted with tuberculosis or a venereal disease. S. 622, introduced by Senator Walsh, Massachusetts, for himself and Senator Clark, Missouri, proposes to authorize the Veterans' Administration to provide vocational rehabilitation and assistance in securing suitable employment for service connected disabled veterans. S. 623, introduced by Senator Walsh, Massachusetts, proposes to extend the federal old age and survivors insurance benefits of the Social Security Act to certain employees of religious, charitable, scientific, literary or educational associations. H. J. Res. 28, introduced by Representative Mundt, South Dakota, and H. J. Res. 36, introduced by Representative Voorhis, California, propose to establish a commission for postwar planning and reconstruction. H. J. Res. 69, introduced by Representative Voorhis, California, proposes to establish the first week in October of each year as "National Employ the Physically Handicapped Week." H. R. 114, introduced by Representative Voorhis, California, proposes to establish under the Fish and Wildlife Service of the Department of the Interior a research laboratory to study the diseases of domestic rabbits. H. R. 130, introduced by Representative Bland, Virginia, provides that the fund for the relief of sick

and disabled and destitute seamen belonging to the United States merchant marine service shall also be available for the relief of sick, disabled, destitute or needy dependents of deceased seamen. H. R. 639, introduced by Representative Whelchel, Georgia, proposes to authorize the Administrator of Veterans' Affairs to provide domiciliary care, medical and hospital treatment and burial benefits to certain veterans who were placed on the pension roll by an omnibus bill in 1922. H. R. 757, introduced by Representative Voorhis, California, provides educational grants in an amount of $500 per person per year to veterans of the second world war to enable them to continue their education. H. R. 912, introduced by Representative Rankin, Mississippi, proposes to provide liberalized benefits for disabled veterans and their dependents. Among other things, this bill (1) would extend the benefits of existing law to any officer, enlisted man, member of the Army Nurse Corps (female) or Navy Nurse Corps (female) employed in the active military or naval services of the United States on or after Dec. 7, 1941, and before the termination of the present war; (2) would provide that in granting hospital treatment and domiciliary care for disabilities not shown to be due to military or naval service, the Administrator of Veterans' Affairs be directed to give preference to veterans who have been discharged by reason of disability and to veterans entitled to or receiving compensation, pension, or retirement pay for service connected disabilities; and (3) would provide for the vocational rehabilitation of veterans. H. R. 979, introduced by Representative Allen, Louisiana, provides that, while hospitalized for service connected disabilities, war veterans shall be rated as totally disabled. H. R. 981, introduced by Representative Bates, Kentucky, provides that, when selecting sites for location of new hospitals or other facilities for use by the Veterans' Administration, due consideration shall be given the prospective number of veterans to be served by such hospitals or facilities and the sites chosen shall be as near the center of each such veteran group as is practicable and most conducive to the health of such group. H. R. 1119, introduced by Representative Peterson, Georgia, provides pensions to peacetime veterans of the Regular Army, Navy, Marine Corps and Coast Guard suffering from arrested tuberculosis contracted while in service. H. R. 1185, introduced by Representative Rankin, Mississippi, proposes to amend Veterans Regulations so as to provide benefits for any officer, enlisted man, member of the Army Nurse Corps (female), or Navy Nurse Corps (female) employed in the active military or naval service of the United States on or after Dec. 7, 1941 and before the termination of the present war. H. R. 1293, introduced by Representative Hare, South Carolina, provides that grants-in-aid by the United States to any state shall be computed on the basis of the ratio of the per capita income of the United States to the per capita income of such state in lieu of being computed on the basis of equal matching of funds by the United States and the State. H. R. 1509, introduced by Representative Reece, Tennessee, provides that any ex-service person shown to have had tuberculosis in a compensable degree and who has drawn a temporary total or permanent and total rating of disability compensation for the tuberculous disease, and who is not now drawing a permanent and total rating of compensation but who is drawing the statutory award or rating of disability compensation for tuberculous disease, shall hereafter receive not less than $100 per month, which rating shall be continued during the lifetime of the veteran. H. R. 1510, introduced by Representative Sauthoff, Wisconsin, proposes to amend the Social Security Act to provide that aid by states to dependent children who are mentally incompetent, irrespective of age, be included in computing grants by the United States to such states for aid to dependent children. H. R. 1566, introduced by Representative Bradley, Michigan, provides for the punishment of persons transporting and receiving certain stolen dogs in interstate commerce. H. R. 4604, introduced by Representative Forand, Rhode Island, proposes to authorize an appropriation of $1,500,000 to construct a veterans' hospital in the state of Rhode Island, with a 300 bed patient capacity, for the diagnosis, care and treatment of general medical and surgical disabilities. H. R. 1723, introduced by Representative Klein, New York, proposes to extend the provisions of the Social Security Act relating to old age and survivors' insurance benefits to employees of certain nonprofit organizations.

STATE MEDICAL LEGISLATION

Arkansas

Bills Introduced.—H. 103 proposes to provide $15,000 to purchase pneumothorax equipment and to pay the fees of physicians for administering pneumothorax treatment to patients certified by the superintendents of the state tuberculosis sanatoriums. H. 123 proposes to require all persons applying for a marriage license to be examined by a licensed physician to determine the presence of any venereal disease or whether or not such persons are idiots, feebleminded, imbecilic, epileptic or insane.

California

Bills Introduced.—S. 547, to amend the premarital examination law, proposes that certificate forms provided by other states having comparable laws and by the United States Army or Navy for military personnel may be accepted. S. 596, to amend the Business and Professions Code, provides for the examination and licensing of chiropodists, and defines chiropody as the diagnosis, medical, surgical, mechanical, manipulative and electrical treatment of the human foot, including the nonsurgical treatment of the leg. No chiropodist may do any amputation or use an anesthetic other than local. A. 664, to amend the business and professions code, proposes the addition of a new chapter to provide for the issuance of licenses to practice physical therapy, defined as the treatment of physical or mental conditions by the use of massage, therapeutic massage, exercise, therapeutic exercise, or by the use of the physical, chemical and other properties of electricity (except x-rays, radium and electrosurgery), heat, light or water. A. 667, to amend the food and drug act, proposes to add thyroid to the list of preparations which shall be deemed to be misbranded unless labeled in the required manner. A. 951 proposes to exempt from taxation the sale of ophthalmic lenses and eyeglass frames and fittings when sold on the prescription of a licensed optometrist.

Colorado

Bills Introduced.—H. 236 proposes the enactment of a service tax act but excepts therefrom services rendered by chiropractors, osteopaths, physicians, surgeons, dentists, embalmers, nurses, optometrists, undertakers, chiropodists, hospitals, cemeteries or state licensed veterinarians. H. 525 proposes to authorize the state board of medical examiners to grant and revoke licenses to practice chiropody, defined as the diagnosis and medical, surgical, mechanical, manipulative and electrical treatment of ailments of the human foot and leg, excepting amputation of the foot or leg or the administration of an anesthetic other than local or the reduction of dislocations or fractures. Surgical treatment is further defined to mean the surgical treatment of all minor foot or leg ailments excepting the surgery on the bony structure or ligamentous tissues of the foot or leg.

Connecticut

Bills Introduced.—S. 484, to amend the food and drug act, proposes, among other things, to limit to emergencies only the dispensing by a physician, veterinarian or dentist of amidopyrine, barbituric acid, cinchophen, dinitrophenol or derivatives thereof, and narcotic drugs. S. 559, to amend the law concerning examinations by school medical advisers, proposes that such medical adviser shall interpret to the school nurse, teacher, principal, superintendent and to the parents of such pupils his findings at the examination and shall recommend how the pupil should be cared for and what provisions, if any, should be made at the school for the care and welfare of the pupil. S. 562, to amend the law concerning health examination of school children, proposes to require physicians who make such examinations to make their recommendations concerning the pupil in writing. S. 678 proposes a penalty of life imprisonment for procuring an abortion, whether the abortion is fatal or not. S. 782 proposes that chiropractors shall be subject to the rules and regulations governing physicians in making and filing death certificates. S. 783, to amend the chiropractic law, proposes to extend the scope of chiropractic practice to include the location and removal of interference with normal nerve function and the right to prescribe and apply hygienic and sanitary measures incident to the care of the body. S. 784, to amend the chiro-

practic law, proposes to extend the scope of chiropractic practice to include the locating and removal of interference with normal nerve function by any method not including the use of drugs or surgery and including hygienic and sanitary measures incident thereto. S. 785, to amend the chiropractic law, proposes to change the educational requirements from four college years of thirty-six weeks each to four college years of eight months each of not less than three thousand six hundred hours. Substitute for H. 312 proposes to appropriate $50,000 for furnishing medical, hospital, obstetric and pediatric care to wives and children of service men when they are unable to purchase such care for themselves. H. 716, to amend the law relating to physiotherapy technicians, proposes to repeal the section setting forth qualifications for registration of physiotherapists without examination. H. 718 proposes the creation of a state board of examiners in massage, which is defined as any process or action of conjoint motion and pressure applied by hand, such as rubbing, stroking, kneading, tapping or other similar manipulation, with or without the application of creams, lotions or liniment or the use of hand vibrators or rollers to any part of the human body for the purpose of relieving pains, aches, stiffness or soreness of muscles or for the purpose of inducing blood circulation or reducing conditions of obesity, or for any other remedial purpose, including the use of any and all other manual means such as physical exercises for the conditioning of the human body. H. 727 proposes the creation of a board consisting of a psychiatrist, a psychologist, a doctor of internal medicine, a surgeon and a psychiatric nurse or social worker to examine all mental patients prior to commitment to any private or state hospital. H. 1026 proposes to authorize the court, in certain circumstances, to order the examination of an accused person to determine whether or not such person is suffering from a venereal disease and, if the result of the test is positive, to make such order as may be necessary for the detention and treatment of such person.

Delaware

Bills Introduced.—S. 38 proposes to authorize the medical council of Delaware to issue temporary emergency certificates to physicians licensed outside the state. S. 41, to amend the medical practice act, proposes to exempt therefrom the treatment of human ills by prayer or spiritual means in accordance with the tenets of any well recognized religious denomination. S. 49 proposes to require all school children to be immunized against smallpox and diphtheria, unless excused by a written statement by a reputable physician.

Idaho

Bill Passed.—H. 43 passed the House on January 29, providing that each applicant for a marriage license must produce a certificate signed by a licensed physician certifying that the applicant has been thoroughly examined and that he is not infected with syphilis in a communicable stage. The physician making the examination may not charge more than $2.

Illinois

Bill Introduced.—S. 21, to amend the traffic laws, proposes that a person shall be deemed, prima facie, to be operating a motor vehicle under the influence of intoxicating liquor whose blood, urine, saliva or alveolar breath contains more than certain stated percentages of alcohol as determined by a chemical test of such breath or body fluid.

Indiana

Bills Introduced.—S. 12, to repeal the present vital statistics law and substitute a more complete one, proposes, among other things, that the term "physician" as used therein shall mean a person lawfully authorized to practice medicine in Indiana. H. 28 proposes the creation of a board of chiropractic examiners to examine and license chiropractors and defines chiropractic as the science of locating and adjusting the subluxations of the articulations of the human spine and its adjacent tissues. H. 187 proposes the appointment of examiners in physical therapy, defined to mean that part of the practice of medicine dealing with the application to pathologic conditions of the physical forces of heat, light, electricity, thermo and hydrotherapy, massage and medical gymnastics and kinesiology.

Kansas

Bills Introduced.—H. 121, to amend the medical practice act, proposes to eliminate the requirement that no two of the required four six month periods which must be spent in the study of medicine and surgery may be given within the same twelve months. The purpose of this bill is apparently to enable graduates of accelerated medical courses to obtain licensure in Kansas. H. 138 proposes to require each physician attending a pregnant woman to take a blood sample within fourteen days of the first examination and to submit such sample for a standard serologic test for syphilis. H. 139 proposes to require each applicant for a marriage license to produce a certificate from a duly licensed physician stating that such person is not infected with syphilis in a communicable stage. Such certificate shall also state that no abnormalities of an anatomic or physiologic nature have been discovered which in the opinion of the examining physician would contribute to a serious incompatibility and so nearly as can be determined that no insanity, feeblemindedness or epilepsy exists. The physician's fee for each person shall not exceed the sum of $2.50.

Bill Passed.—H. 120 passed the House on February 2. It proposes to excuse physicians in the military service from renewing their license annually and prohibits revocation of such license during such period.

Maine

Bill Introduced.—H. 124, to amend the divorce law, proposes to authorize the granting of divorces on the ground of insanity.

Massachusetts

Bills Introduced.—S. 125, to amend the law relating to the commitment of insane persons to state institutions, proposes that no person other than a duly qualified or registered physician in good standing may commit any insane person to a psychopathic institution in the state. H. 347 proposes to repeal the law requiring premarital physical examinations and serologic tests. H. 352, to amend the law relative to the payment of medical, hospital and other services to dependent children and their parents, proposes to authorize expenses for such services to be paid directly to the person furnishing them when the patient has died or been committed to an institution. H. 458, to amend the unemployment compensation law, proposes that any person absent from work on account of sickness shall not be debarred from receiving benefits under the law. H. 507 proposes to prohibit the sale of contraceptive devices except by a registered pharmacist on prescription by a registered physician and no physician shall furnish a prescription for any device purported to be usable for feminine hygiene except when, in his judgment, a condition of infection, irritation, disease or organic ill necessitates or justifies such prescription. H. 509 proposes to require every parent or guardian of a minor to keep such minor at home when ill with any of the following diseases: sore throat, common cold, grip, measles, chickenpox, mumps, scarlet fever, whooping cough, chills or fever, stiffness in neck, or rash on body. H. 512 proposes certain conditions which an employer of a pregnant woman must comply with, especially with regard to extra rest periods, etc. H. 797 proposes to authorize the state department of education to make an investigation and a report, including medical opinions thereon, on the toxic effects of nicotine and beverage alcohol on school children and youths. H. 863 proposes that no person shall be required to submit to vaccination or inoculation of any kind against his will as a condition precedent to attending any public school or institution and that no such certificate of vaccination shall be required for admission to the public schools. Any doctor, nurse or other person who vaccinates or inoculates a child or an adult under guardianship, without the written consent of the parent or guardian of said child or adult, will be subject to a fine of $100 or imprisonment for a year or both. H. 866 proposes to authorize the board of health, when it has reason to believe that any person is suffering from syphilis or gonorrhea, to cause a medical examination to be made of such person without charge by a qualified physician registered in the commonwealth. H. 1198 proposes certain restrictions with respect to the performance of experiments on live animals. In general, the proposal authorizes such experiments to be made only by a person holding a license issued by the board of regis-

tration in medicine and only when the experiment is necessary with a view to the advancement of new discovery of physiologic knowledge or knowledge which will be useful for saving or prolonging life or alleviating suffering.

Michigan

Bill Introduced.—H. 102 proposes the creation of a state board of examiners in naturopathy and that licentiates may practice naturopathy as taught by the recognized college of naturopathy.

Minnesota

Bill Introduced.—H. 303, to amend the workmen's compensation act, proposes to redefine the word "accident" so as to include "occupational disease," defined as a disease peculiar to the occupation in which the employee is engaged and due to causes in excess of the ordinary hazards of employment, a disease arising out of and in the course of the employment.

Missouri

Bills Introduced.—S. 9 proposes the creation of a state board of naturopathic registration and examination to examine applicants for licenses to practice naturopathy. The system, method or science of treating diseases of the human body, commonly known as naturopathy, and as taught and practiced by the recognized schools of naturopathy, is declared not to be the practice of medicine and surgery. H. 45, to amend the law relating to marriage, proposes to require any person applying for a license to marry to furnish a report of a negative laboratory serologic test for syphilis and an affidavit signed by him or herself that he or she is free from syphilis. If the laboratory test is positive, the applicant must present a certificate from a physician licensed to practice in the state of Missouri certifying that the applicant is not infected with syphilis in a communicable stage.

New York

Bills Introduced.—S. 311 and A. 362, to amend the law relating to the sale of poisonous, deleterious or habit forming drugs or medicines, proposes that no manufacturer, bottler, packer or wholesaler of drugs shall sell such preparations without being registered. S. 335, to amend the domestic relations law, proposes to exempt members of the armed forces from complying with the premarital examination requirements. S. 377 and A. 493, to amend the labor law, propose to authorize payments of unemployment insurance to persons incapacitated through illness who have previously qualified for benefits. A. 97 proposes to define x-ray diagnosis as that method of medical practice in which demonstration and examination of the normal and abnormal structures, parts or functions of the human body are made by use of x-rays. Any person, the bill provides, who holds himself out to diagnose or to make any interpretation or explanation by word of mouth, writing or otherwise of the meaning of a fluoroscopic or registered shadow or shadows of any part of the human body made by the use of x-rays, or who uses x-rays or radium for the treatment of any human ailment will be deemed to be engaged in the practice of medicine. A. 514, to amend the law relating to premarital examinations, proposes to exempt from the provisions of such law the granting of a marriage license where one of the parties is in the armed forces of the United States.

North Carolina

Bill Passed.—H. 110 passed the house, January 29. It proposes to authorize state institutions for the care of the sick, feebleminded or insane to have performed on persons dying in such institution a postmortem examination in the laboratories of incorporated medical schools, after securing the written consent of the decedent person's husband or wife or next of kin.

North Dakota

Bills Introduced.—S. 57 proposes the enactment of a uniform narcotic act. S. 63 proposes to prohibit the sale of barbital except on a written prescription of a doctor of medicine, doctor of dental surgery or doctor of veterinary medicine lawfully practicing his profession in the state. S. 77 proposes to provide for the establishment, maintenance and duties of a district board of health and provides that the district health officer appointed by such board shall be a physician and surgeon regularly licensed to practice medicine and surgery in the state of North Dakota.

Bill Passed.—S. 58 passed the senate on February 2. It proposes to amend the premarital examination law by authorizing the required laboratory test for syphilis to be performed by the state department of health or by any other state public health laboratory approved by the state health officer.

Ohio

Bill Passed.—S. 17 passed the senate on January 26. It proposes to exempt from the operation of the sales tax the sale of drugs or medicine compounded, prepared or sold in accordance with or under a prescription issued by a licensed practitioner of medicine.

Oklahoma

Bills Introduced.—H. 175 proposes that no child shall be received or admitted as a pupil at a public school who has not been successfully immunized against smallpox and diphtheria. H. 189 proposes to require certain specified types of domestic employees to undergo a physical examination by a licensed physician or a recognized county or city health unit before being employed and annually thereafter.

Oregon

Bills Introduced.—S. 77 proposes to repeal the existing law providing for state reimbursement to hospitals for services rendered victims of motor vehicle accidents. H. 71 and H. 72 propose the repeal of the existing laws prohibiting driving an automobile while intoxicated. The present law provides that persons arrested and charged with so driving may be taken before a duly licensed physician for examination and that the physician's evidence of such examination may be admitted in evidence at a subsequent trial. H. 199 proposes to reenact and extend the existing law providing for state reimbursement to hospitals for services rendered victims of motor vehicle accidents so as to cover ambulance firms. H. 222, to amend the chiropractic law, proposes to require chiropractors, at the time of the annual renewal of their licenses, to present proof that they have attended a two day educational program conducted by the Oregon chiropractic association. H. 229 proposes to reenact and extend the existing law providing for state reimbursement to hospitals for services rendered victims of motor vehicle accidents so as to cover nurses, doctors and owners and operators of ambulances as well. H. 244 proposes the creation of a state board of massage examiners and defines the term massage as the method, art or science of treating the human body for hygienic or remedial purposes exclusively by rubbing, stroking, kneading, tapping or rolling the same with the hands, or by rubbing, stroking, kneading, tapping or rolling the body with any other agency or instrumentality for the purpose of relieving, alleviating and reducing affected parts thereof.

Pennsylvania

Bill Introduced.—S. 53, a bill to enact an "Administrative Agency Law," proposes, among other things, to prescribe the procedure by which administrative boards may promulgate regulations.

Rhode Island

Bill Introduced.—H. 591 proposes the creation of a board of examiners for electrolysis, defined as the removal of or preventing the growth of the hair on any part of the human body by means of electrical apparatus.

Washington

Bills Introduced.—S. 76 proposes to exempt members of the armed forces from being required to continue in full force and effect their license to practice a profession in the state and provides further that such license shall continue valid if it was valid at the time the licensee entered the service. It may be renewed within six months after an honorable discharge. H. 108 proposes to require each applicant for a marriage license to present a certificate from a physician licensed to practice medicine and surgery in the state of Washington or from a physician licensed to practice medicine and surgery in any other state showing that such applicant is free from syphilis in a communicable stage.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Dr. Halverson Named State Health Officer.—The governor has appointed Dr. Wilton L. Halverson, health officer of Los Angeles County, as state health officer to succeed Dr. Bertram P. Brown, Sacramento. Dr. Halverson, who has held the Los Angeles position for more than a year, formerly served as health officer of Pasadena for seven years. Born in Litchfield, Minn., Dr. Halverson graduated at the College of Medical Evangelists, Loma Linda, in 1929.

Woman Named Director of State Institutions.—Mrs. Dora Shaw Heffner, Los Angeles, has been named state director of institutions to succeed Dr. Fred O. Butler, medical director and superintendent of the Sonoma State Home, Eldridge, who has been acting director since the resignation of the late Dr. Aaron I. Rosanoff, newspapers report. In announcing the appointment, Governor Warren is reported to have said that Mrs. Heffner has "long been identified with institutional probationary and human relations activities in Southern California as an attorney and a doctor of administration of social service." From 1936 to 1938 Mrs. Heffner was referee of the Los Angeles Juvenile Court, where she is now superior court commissioner.

Psychiatrist Needed.—A psychiatrist is being sought by the Los Angeles County Civil Service Commission for a position with the Los Angeles County Hospital to render professional medical services in the diagnosis, care and treatment of patients under observation for mental and nervous diseases. Physicians under 55 years of age, whether residents of Los Angeles County or not, who have graduated with an M.D. degree from an approved medical school and who have completed at least a one year internship in an approved hospital are eligible for this position. The salary will be $235 a month. Full information may be obtained from the office of the commission, Room 102, Hall of Records, Los Angeles, and applications must be filed not later than February 17.

Dr. Housman Paroled.—The San Francisco *Examiner* recently reported that the state board of prison terms and paroles had granted a parole from San Quentin to Dr. Nathan S. Housman, San Francisco, effective Dec. 18, 1942. Dr. Housman was charged with failure to keep accurate records of narcotic sales. He entered San Quentin Nov. 4, 1941 to serve a one to fourteen year sentence for perjured testimony at his trial (THE JOURNAL, Dec. 13, 1941 and Jan. 24, 1942). The board of prison terms and paroles fixed his sentence at five years and granted him a "home and care" parole effective after he served eighteen months, minus time off for good behavior. When able to work after recovery from a minor operation, Dr. Housman will take a position approved by the parole board, it was stated.

COLORADO

Harvey Sethman Enters Military Service.—Harvey T. Sethman, Denver, executive secretary of the Colorado State Medical Society and managing editor of the *Rocky Mountain Medical Journal* for the past fourteen years, was called to active duty as captain, medical administrative corps, Army of the United States, February 1. He will be on leave of absence from his position with the society for the duration of his military service. Until further notice during Mr. Sethman's absence, the executive office and staff of the society and its publications including the *Rocky Mountain Medical Journal* will be in charge of the following persons, all of Denver:

Dr. John S. Bouslog, secretary, Colorado State Medical Society, 537 Republic Building.

Dr. Lyman W. Mason, acting editor, Rocky Mountain Medical Journal, 537 Republic Building.

Miss Helen Kearney, assistant secretary, Colorado State Medical Society, and business manager, Rocky Mountain Medical Journal, 537 Republic Building.

The trustees request that addresses for official correspondence and exchange journals be appropriately changed, noting that the location and mailing address of the society and its journal remain at 537 Republic Building, Denver, as in the past.

CONNECTICUT

Edgar Allen Dies.—Edgar Allen, Ph.D., New Haven, professor and chairman of the department of anatomy at Yale University School of Medicine and director of graduate studies, died, February 3, aged 50, of an acute attack of heart disease, reportedly while patrolling the Connecticut shoreline in a Coast Guard auxiliary craft. Dr. Allen was born in Canon City on May 2, 1892. He graduated at Brown University in 1915 with the degree of bachelor of philosophy, later receiving there the A.M., Ph.D. and Sc.D. degrees. Assistant in biology at Brown from 1913 to 1915 and assistant in embryology and neurology from 1915 to 1917, Dr. Allen served the United States Fisheries Bureau as an investigator at Woods Hole, Mass., during the summer of 1919 and at Fairport, Iowa, during the summer of 1922. From 1919 to 1923 he served at Washington University School of Medicine, St. Louis, first as instructor and then as associate in anatomy and for a time as secretary of the faculty. He became professor of anatomy at the University of Missouri School of Medicine in 1923, serving as dean from 1930 to 1933, when he joined the faculty of Yale as professor of anatomy.

An associate member of the American Medical Association, Dr. Allen held memberships in a number of scientific societies, including the American Association for the Advancement of Science, the Society of Experimental Biology and Medicine, American Society of Zoologists, Phi Gamma Delta and Phi Beta Pi. In 1941 he was chosen president of the Association for the Study of Internal Secretions and in 1942 president of the American Association of Anatomists for a two year term. He was vice president of the latter group in 1931. During World War I, Dr. Allen served in the U. S. Army from May 1917 to February 1919, first as a private and later as a second lieutenant.

He had made extensive contributions to the literature and at one time was a member of the editorial board of *Endocrinology*. Dr. Allen made noteworthy contributions to the fields of anatomy and physiology of reproduction and in 1941 was awarded the Baly Medal of the Royal College of Physicians, London, in recognition of his work on estrogens. With Drs. J. P. Pratt and Q. U. Newell, Dr. Allen is credited with obtaining the first unfertilized human ova to be recovered from the uterine tubes and definitely identified.

DISTRICT OF COLUMBIA

Dr. Ives Dies.—James E. Ives, Ph.D., for many years physicist with the U. S. Public Health Service, died January 1 of injuries received when he was struck by a street car. He was 77 years of age. He was physicist in the Office of Industrial Hygiene and Sanitation of the public health service from 1921 to 1931, when he became senior physicist. Dr. Ives retired in 1936.

Supreme Court Refuses to Assume Jurisdiction on Validity of Birth Control Law.—In an opinion which did not discuss the merits of the Connecticut laws, the United States Supreme Court, February 1, refused to assume jurisdiction to pass on the validity of the Connecticut birth control law because of the circumstances under which the case was presented to it. The case was brought before the Supreme Court by Dr. Wilder Tileston, David P. Smith clinical professor of medicine, Yale University School of Medicine, New Haven, Conn., supported by hundreds of physicians, and was an appeal from a decision of the Connecticut Supreme Court of Errors that it was illegal for a physician to prescribe the use of contraceptives even if he believed a married woman's life might be jeopardized by pregnancy. In the recent opinion the Supreme Court said that Dr. Tileston was not the proper person to bring the suit because his own life had not been endangered by the state statutes. The decision of the Supreme Court led lawyers to believe that another proceeding could be instituted by patients, asserting that the anticontraceptive laws would jeopardize their lives, according to newspaper reports.

ILLINOIS

Sputum Specimen Not Required to Obtain Sulfonamides.—The state department of health has announced that sulfonamide drugs for the treatment of pneumonia will be furnished free to the physicians of Illinois without requiring a specimen of sputum for typing. Physicians will now be able to institute sulfonamide therapy immediately on making a diagnosis of pneumonia. Type specific antipneumococcus serum of necessity will be available only after the type has been determined. At the request of any physician, the state department will send from Springfield one bottle of sulfathiazole together with a case report form. On the return of the completed case report indicating that the drug has been used in the treatment of

pneumonia, another bottle will be sent. Serum centers and typing stations will continue to distribute serum and sulfonamide compounds under the same policy as in the past and require sputum typing as in the past. The requirement for a sputum specimen, adhered to in the past, was eliminated by the state department of health to conserve the time of physicians in civilian practice whose work has increased.

Meeting of Bacteriologists.—The winter meeting of the Society of Illinois Bacteriologists will be held at the Chicago Illini Union February 19. Mr. Howard E. Lind, Chicago, senior bacteriologist, Illinois Department of Public Health, will present a paper on "Observations on Variant Types of C. Diphtheriae." John C. Carey, Ph.D., bacteriologist, research laboratory, Hiram Walker & Sons, Inc., Peoria, will read a paper on "Some Factors Affecting the Microbiological Assay for Nicotinic Acid"; the co-authors are J. C. Bauernfeind, Ph.D., and Clair S. Boruff, Ph.D., Peoria. Dr. Francis B. Gordon, associate professor of bacteriology, University of Chicago School of Medicine, will read a paper on "Studies on the Problem of Insect Transmission of Poliomyelitis," the co-authors of which are Frank M. Schabel, Ph.D., Harold R. Reames, Ph.D., and Mary E. Snow.

Chicago

Public Forum on Cancer.—A public forum on Chicago's cancer problems will be held at the John B. Murphy Memorial Auditorium, February 16, under the auspices of the Chicago Cancer Committee, Inc. Dr. Bowman C. Crowell, associate director of the American College of Surgeons, will act as moderator. The tentative program includes the following speakers:

Dr. Ludvig Hektoen, chairman of the committee, The Program of the Chicago Cancer Committee.
Dr. James P. Simonds, Hospital Facilities for Care of Cancer Cases and Instruction on Cancer to Medical Students—Report of New Survey.
Dr. Herman N. Bundesen, Cancer Mortality Statistics in Chicago and the Nation.
Dr. Rollo K. Packard, Relation of the Chicago Hospital Council to the Cancer Problem.
Mary E. Westphal, R.N., director, Visiting Nurse Association of Chicago, Home Care of Cancer Cases.
Dr. Alexander Brunschwig, Cancer Research in Chicago.
Mrs. Arthur I. Edison, Local Program of the Women's Field Army.
Dr. Raymond V. Brokaw, Springfield, Ill., subject to be announced later.

A period for questions and answers pertaining to subjects that have been presented will be provided following the discussions.

INDIANA

Educational Conference on Industrial Health.—The committee on industrial health of the Indiana State Medical Association will hold a two day conference on industrial health in Indianapolis, February 25-26, to train physicians for war industries. The program will include the following speakers:

Dr. Carey P. McCord, Detroit, Organization and Cost of Medical Services in Industry.
Dr. Frederick B. Wishard, Anderson, Preemployment Examinations.
Dr. George S. Bond, Indianapolis, Criteria in the Evaluation of Abnormal Hearts.
Mr. Andrew T. Court, Detroit, Comments on Sickness Absenteeism.
Dr. Milton H. Kronenberg, Chicago, Women in Industry.
Dr. Adolph G. Kammer, East Chicago, Tuberculosis Control in Industry.
Dr. Harold A. Vonachen, Peoria, Ill., Syphilis Control in Industry.
Mr. Albert Stump, Indianapolis, Legal Responsibilities of the Industrial Physician.
Dr. Lewis Schwartz, Bethesda, Md., Diagnosis, Treatment and Prevention of Industrial Dermatoses.
Dr. Leroy U. Gardner, Saranac Lake, N. Y., Diagnosis of Silicosis.

The dinner session Thursday evening will be addressed by J. J. Bloomfield, Bethesda, Md., sanitary engineer, U. S. Public Health Service, "Industrial Hygiene in War Production" and Dr. Clarence D. Selby, Detroit, "A War to Win." On Friday a symposium on lead poisoning will be conducted by:

Dr. Robert A. Kehoe, Cincinnati, Experimental Studies on Lead Absorption and Excretion in Human Subjects and Their Relationship to the Diagnosis and Treatment of Lead Poisoning.
Rolla N. Harger, Ph.D., Indianapolis, Measurement of Industrial Lead Exposure by Air Analysis.
Mr. Jacob Cholak, Cincinnati, Measurement of Industrial Lead Exposure by Analysis of Blood and Excreta of Workmen.

A symposium on industrial injuries, with the following participants, will conclude the session:

Dr. Edmond O. Alvis, Indianapolis, Essentials on First Aid and Later Management of Industrial Eye Injuries.
Dr. Sumner L. S. Koch, Chicago, Prevention and Treatment of Hand Infections.
Dr. William V. Woods, Indianapolis, Back Injuries.
Dr. Harold M. Trusler, Indianapolis, Treatment of Burns.
Dr. George J. Garceau, Indianapolis, Treatment of Fractures.

The program is part of a plan whereby the state committees on procurement and assignment and on industrial health may assist industry in solving the medical procurement problems of industry. The entire program is designated as Indiana's Emergency Educational Plan in Industrial Health.

IOWA

New Director of Venereal Disease Control.—Dr. Andrew C. Woofter, Hot Springs, Ark., has been assigned to Iowa by the U. S. Public Health Service to direct the state's venereal disease program during the war period. He succeeds Dr. Regnar M. Sorenson, who is now on active duty with the reserve corps of the public health service at the state board of health, Topeka.

Pneumococcus Study Course.—The state department of health will conduct a pneumococcus study course in the Medical Laboratories Building, Iowa City, February 16-18, the eighth of these courses to be held in the last four years. Financed by the U. S. Public Health Service, the course will be under the direction of Dr. Milford E. Barnes, Iowa City. Emphasis will be placed on bacteriologic diagnosis, including the Neufeld method and the technic of mouse inoculation.

Eli Lilly Medal Awarded to Harland Wood.—The Eli Lilly and Company Research Award for 1942 was presented to Harland G. Wood, Ph.D., since 1936 research assistant in bacteriology at the Iowa State College of Agriculture and Mechanic Arts, Ames, January 28, at a joint meeting of the Iowa State College Branch of the Society of Sigma Xi and the North Central Branch of the Society of American Bacteriologists. Dr. Wood was selected for the award on the basis of his contributions to bacterial physiology. Dr. Wood was born on Sept. 2, 1907 in Mankato, Minn. He received the A.B. degree from Macalester College, St. Paul, in 1931 and the Ph.D. in physiologic bacteriology at Iowa State College in 1935. During 1935-1936 Dr. Wood was the holder of a National Research Council fellowship at the University of Wisconsin. The Lilly award consists of $1,000 and a bronze medal. It is offered by Eli Lilly and Company to a young man or woman, under 35 years of age, who has made outstanding contributions to knowledge in the fields of bacteriology or immunology while conducting investigative work in a noncommercial research or educational institution in the United States or Canada. The recipient is chosen by an award committee composed of members of the Society of American Bacteriologists, the American Association of Immunologists and the American Society for Experimental Pathology.

KANSAS

Immunization Program in Wichita.—The city of Wichita recently conducted a citywide immunization program to protect children against smallpox and diphtheria. The program was sponsored by the Sedgwick County Medical Society, the county and city health departments and the state board of health. About 8,000 children received the immunization treatment.

Personal.—Mr. Clarence V. Beck, Emporia, has been named the new attorney for the Kansas State Board of Medical Registration and Examination to succeed Mr. Theo F. Varner, Independence, who is in military service. Mr. Beck was attorney general of the state from 1935 to 1939 and previous to that was county attorney of Lyon County for several terms.

Accidental Deaths.—A provisional total of 1,349 accidental deaths has been reported for Kansas during 1942. Home accidents accounted for 537 deaths, motor vehicle 365, occupational 228 and public (other than motor vehicle) 219. In 1941 the total of accidental deaths was 1,427 with motor vehicle leading with 537, home 517, public (other than motor vehicle) 190 and occupational 183. Comparing the two years as to types of accidental deaths, there was an increase of accidental deaths except motor vehicle, in which a decrease of 172 was recorded. During 1942 Kansas averaged 1 motor vehicle death a day, the lowest number ever recorded since this study was initiated, according to the *News Letter* of the state board of health.

MARYLAND

Dr. Hussey Named Director of Industrial Hygiene Laboratory.—Dr. Raymond Hussey, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, and a member of the Council on Industrial Health, American Medical Association, Chicago, has been appointed scientific director of the new Army Industrial Hygiene Laboratory at Johns Hopkins University School of Hygiene and Public Health (THE JOURNAL, February 6, page 446). The laboratory will operate under the direction of the occupational hygiene branch of the preventive medicine division of the Office of the Surgeon General of the Army. Dr. Hussey was born in Greensboro, N. C., in 1883 and graduated at Johns Hopkins in 1911. At different times he has been associate in pathology and biophysics at the Rockefeller Institute, assistant professor of pathology at Cornell University Medical College and associate professor at Yale University School of Medicine. He has held concurrent appointments at the University of Maryland School of Medicine and at Johns Hopkins since 1936.

MICHIGAN

Keratoconjunctivitis Made Reportable. — The Detroit Department of Health has placed keratoconjunctivitis on its list of reportable diseases, according to *Detroit Medical News*.

New County Health Unit.—Approval was given on January 4 to the establishment of a new health department in St. Clair County. The new unit will bring the total of counties in the state having full time health services to sixty-seven, leaving only sixteen counties without these services. The first county health department in the state was established in 1927 in Oakland County.

State Society President Named to Professorship.—The board of regents of the University of Michigan recently appointed Dr. Howard H. Cummings, Ann Arbor, chairman of the department of postgraduate medicine and professor of postgraduate medical education. Dr. Cummings, who graduated at the University of Michigan Medical School in 1910, is president of the Michigan State Medical Society.

Personal.—Dr. Andrew P. Biddle, Detroit, honor member of the Wayne County Medical Society, was elected president of the Detroit Library Commission at its annual meeting, January 5; he has been a member of the commission for seventeen years.——Dr. Martin H. Hoffmann has resigned as director of the psychiatric clinic at Eloise Hospital and Infirmary and head of the county psychopathic parole clinic at Eloise.

MINNESOTA

Dr. Blalock to Give Judd Lecture.—Dr. Alfred Blalock, Baltimore, professor of surgery at Johns Hopkins University School of Medicine and director of the department of surgery, Johns Hopkins Hospital, will give the tenth E. Starr Judd Lecture at the University of Minnesota Medical School, Minneapolis, in the Museum of Natural History Auditorium, March 11. The subject of Dr. Blalock's lecture will be "Traumatic Shock with Particular Reference to War Injuries." The late Dr. Edward Starr Judd, Rochester, an alumnus of the medical school, established the annual lectureship in surgery a few years before his death in 1935.

Minnesota Medicine Observes Twenty-Fifth Anniversary.—A special issue of *Minnesota Medicine* in January marked the twenty-fifth anniversary of its founding. The issue contains articles on the development of medicine in Minnesota and the progress of the specialties. The journal had its inception with the appointment of a committee at a meeting of the state medical society in 1916 in Minneapolis. The first issue bearing the title *Minnesota Medicine* was published in January 1918. When the first editor, Dr. Ernest T. F. Richards, St. Paul, resigned in 1919, Dr. Carl B. Drake, St. Paul, was appointed to succeed him and still serves in this capacity.

MISSOURI

Personal.—Dr. J. Lee Harwell, Poplar Bluff, was appointed to the city board of health on December 30. Drs. Alfred R. Rowe and Walter L. Brandon, Poplar Bluff, are the other members of the board.——Dr. Carl V. Moore, St. Louis, has been appointed an assistant editor of the new journal *Nutrition Reviews*. —— Dr. Elmer E. Glenn, Springfield, was recently chosen president of the Missouri Tuberculosis Association at its meeting in St. Louis.

Ophthalmologists to Return Portion of Fees to Colleagues in Armed Services. — Members of the St. Louis Ophthalmic Society recently announced the adoption of a resolution signifying their agreement to remit for the duration of the emergency to every ophthalmologist in the society serving in the armed forces one half of any and all income derived from professional services to patients of the absent physician. Patients will also be encouraged to return to their own physicians when they reenter practice after the war.

NEW JERSEY

Physician Heads Child Care Committee.—Announcement has been received of the recent appointment of Dr. Ellen C. Potter, Trenton, as director of medicine and chairman of the child care committee of the Office of Civilian Defense Director of the State of New Jersey. Others on the committee include Dr. Julius Levy, Newark, consultant to the bureau of maternal and child health, state department of health, and representatives from the state department of public instruction, the state department of labor and various agencies of social work concerned with child welfare.

Sale of Vitamins Curbed. — The New Jersey Board of Pharmacy announced on January 28 that vitamin preparations that are sold exclusively as foods or food accessories and the labels of which bear no directions for use in the prevention, mitigation or cure of disease must be labeled "not for medical use" when sold in New Jersey. Otherwise the board will consider the vitamin products as coming within the classification of drugs and medicines within the meaning of the pharmacy act, it was announced in the New York *Times*. A properly balanced diet is the best source of necessary vitamins, it was stated, and it is up to physicians to decide if and when vitamins are needed for the treatment or prevention of disease, and in such cases the concentrated vitamins in the usual capsule form in proper dosage may be prescribed and, of course, in such cases they are drugs.

NEW YORK

Chemical Warfare.—A postgraduate course on the medical aspects of chemical warfare will be conducted for the Tompkins County Medical Society at the county memorial hospital, Ithaca, February 16, under the auspices of the committee on public health and education of the state medical society and the health preparedness commission of the state war council. The speakers will be Neal E. Artz, Ph.D., Syracuse, and Dr. John J. Bourke, Albany.

New York City

The Harvey Lecture.—Dr. William J. Robbins, director of the New York Botanical Gardens, will deliver the fifth Harvey Society Lecture of the current series at the New York Academy of Medicine, February 18. His subject will be "Some Internal Factors Limiting Growth."

The Brickner Lecture.—Dr. Martin Silberberg, assistant in pathology, New York University College of Medicine, will deliver the eleventh Walter M. Brickner Lecture at the Hospital for Joint Diseases, February 26, on "The Influence of the Endocrine Glands on Growth and Ageing of the Skeleton."

Rheumatism Organization Formed. — The New York Rheumatism Association was formerly organized January 22 to "unite physicians in New York and environs who are interested in arthritis and rheumatic disorders, to improve the treatment of patients with arthritis, particularly those attending the arthritis clinics in Greater New York, and to stimulate research on these disorders." Officers are Drs. Russell L. Cecil, president; Martin H. Dawson, vice president, and Edward F. Hartung, secretary-treasurer.

NORTH CAROLINA

Physician Reported Missing in Action.—Lieut. (j. g.) Walter Earl Brown, M. C., U. S. Navy, formerly of Rocky Mount, has been reported "missing in action in the performance of his duty and in the service of his country," newspapers recently announced.

OHIO

Changes in Health Officers.—Dr. James F. Wilson, Washington Court House, health commissioner of Fayette County and secretary for many years of the Fayette County Medical Society, has been appointed health commissioner of district number four of the Michigan Department of Health, with headquarters in Rogers City, Mich. —— Dr. Hazelett A. Moore, Oxford, chairman of the Butler County Board of Health since 1939, has been appointed health commissioner of the county. He succeeds Dr. Clifford J. Baldridge, who resigned.

TEXAS

State Health Officer Reelected.—Dr. George W. Cox, Austin, was recently reelected state health officer for a two year term beginning January 1. He has held the position for six years.

Personal. — Dr. Marie Elizabeth F. Gentry was recently named director of the maternal and child health division of the Austin City Health Department, succeeding Dr. William W. Kelton Jr., who has entered the army air corps.——Dr. Patti Jane Byars, Fort Worth, was recently named medical adviser of the Texas League for Planned Parenthood. Dr. Byars recently returned to Texas after three years at the Massachusetts Memorial Hospitals, Boston.

Pharmacologist Becomes Professor of Medicine.—Dr. Raymond L. Gregory has relinquished his professorship of pharmacology at the University of Texas Medical Branch, Galveston, to accept an appointment as professor of medicine and director of the outpatient clinic and continuation courses at the school. Chauncey D. Leake, Ph.D., dean of the school and formerly professor of pharmacology at the University of California Medical School, San Francisco, will temporarily assist in teaching pharmacology at the medical school with Dr. Gregory and other members of the staff.

GENERAL

New Editorial Board for Endocrinology.—A new editorial board has been announced for *Endocrinology*. Members are Dr. John S. L. Browne, department of medicine, McGill University Faculty of Medicine, Montreal, Canada; Earl T. Engle, Ph.D., department of anatomy, Columbia University College of Physicians and Surgeons, New York; Carl G. Hartman, Ph.D., department of zoology, University of Illinois, Urbana, Ill.; Edward C. Kendall, Sc.D., division of biochemistry, Mayo Clinic, Rochester, Minn.; Fred C. Koch, Ph.D., department of biochemistry, University of Chicago; Dr. Cyril N. H. Long, department of physical chemistry, Yale University School of Medicine, New Haven, Conn., and Dr. Harry B. van Dyke, Squibb Institute for Medical Research, New Brunswick, N. J. The managing editor is Dr. Edwin B. Astwood of the departments of medicine and pharmacology, Harvard Medical School, Boston; the associate managing editor is Edward W. Dempsey, Ph.D., of the department of anatomy of Harvard. A statement of the new policies for the journal appears in the February issue of *Endocrinology*.

Adjustments of Wages of Hospital Employees.—By General Order No. 26, adopted by the National War Labor Board, January 22, adjustments in the wages or salaries of employees engaged in rendering hospital services and employed by nonprofit organizations maintaining and operating hospitals will be deemed approved without submission to the board, provided such adjustments do not raise the wages or salaries beyond the prevailing level of compensation for similar services in the area or community. Monthly reports of such adjustments must be submitted to the Division of Review and Analysis of the National War Labor Board, together with such information and data as the division or the board may from time to time require. Such adjustments as are made will be subject to the board's ultimate right of review on its own initiative, but any modification or reversal of the adjustments will not be retroactive. On the other hand, adjustments which will have the effect of raising the wages or salaries above the prevailing level of compensation for similar services in the area must be submitted for approval by the board in the usual manner.

Follow-Up on White House Conference on Children.—A summary of the two and one-half year follow-up program of the White House Conference on Children in a Democracy, sponsored by the National Citizens Committee, has just been published. The program, which has been financed by short term grants, ended on January 1. The New York Office has been closed, but the National Citizens Committee will remain intact so that it can be called together when independent citizen action is called for. Miss Katharine F. Lenroot, Washington, D. C., chief of the Children's Bureau, U. S. Department of Labor, and executive secretary of the White House Conference, has agreed to take over responsibility for correspondence and cooperation with state White House Conference committees and with national organizations in the follow-up program. Miss Lenroot has assigned the responsibility follow-up within the bureau to Emma O. Lundberg, who has been associated with previous White House Conferences and served as assistant secretary of the 1940 conference. All future correspondence concerning the follow-up program of the White House Conference should be sent directly to Miss Emma O. Lundberg, Children's Bureau, U. S. Department of Labor, Washington, D. C. The National Citizens Committee was one of two appointed by the 1940 White House Conference on Children to implement its one hundred recommendations in the field of education, child health and social welfare. The other, the Federal Interagency Committee, was formed to bring about a working relationship among all the federal offices in any way concerned with children. The report mentions that state follow-up committees were initiated in Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Indiana, Kansas, Louisiana, Massachusetts, Minnesota, Montana, Nebraska, Nevada, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, Wyoming and Puerto Rico, and as a result of these activities improvement in considerations in child care was effected in nearly every state program. As a result of its 1941 state White House Conference the Nevada Committee was largely responsible for improvement in adoption laws and legal control for antepartum examinations for venereal disease. The Ninth Regional Conference sponsored by Florida's Committee resulted in the increase of state appropriations for the Aid to Dependent Children funds from $140,000 to $2,000,000. The report indicates that the work of the committee was instrumental in bringing about more concentrated programs throughout the country. During its two and one-half years existence it has worked toward the objectives for which it was created: appropriation and dissemination of educational material, working for the cooperation of national organizations in furthering the objectives of the 1940 White House Conference, cooperation with governmental agencies in matters relating to the follow-up program and assistance in the development of state territorial programs adapted to the needs and interests of the state.

Tropical Medicine Study Begins at Army Medical School.—The Association of American Medical Colleges has made available a list of those taking the course of tropical medicine at the Army Medical School, Washington, D. C., under the sponsorship of the association with the financial aid of the John and Mary R. Markle Foundation:

Donald C. A. Butts, Sc.D., Georgetown University School of Medicine, Washington, D. C.
William H. Headlee, Ph.D., Indiana University School of Medicine, Indianapolis.
John F. Kessel, Ph.D., University of Southern California School of Medicine, Los Angeles.
Dr. Harry L. Douglas, University of Kansas School of Medicine, Kansas City.
Dr. Omar John Fareed, University of Chicago School of Medicine.
Dr. William C. Black, University of Colorado School of Medicine, Denver.
Robert Barton Dienst, Ph.D., University of Georgia School of Medicine, Augusta.
Dr. Morris H. Brodkey, Creighton University School of Medicine, Omaha.
Mabel S. Ingalls, Ph.D., Albany Medical College, Albany, N. Y.
Dr. William Mc.D. Hammon, University of California Medical School, San Francisco.
Dr. Raymond M. Hill, College of Medical Evangelists, Los Angeles.
Dr. Roswell Dorr Johnson, Yale University School of Medicine, New Haven, Conn.
Dr. Arthur J. Merrill, Emory University School of Medicine, Atlanta, Ga.
Dr. Robert C. Lowe, Louisiana State University School of Medicine, New Orleans.
Dr. Matthew A. Derow, Boston University School of Medicine.
Dr. William Charles McCarty, Tufts College Medical School, Boston.
Dr. Robert A. Hettig, University of Michigan Medical School, Ann Arbor.
Dr. Thomas H. Hunter, Columbia University College of Physicians and Surgeons, New York.
Dr. Thomas P. Almy, Cornell University Medical College, New York.
Dr. Howard B. Slavin, University of Rochester School of Medicine and Dentistry, Rochester, N. Y.
Dr. Bertram S. Levinson, Syracuse University College of Medicine, Syracuse, N. Y.
Dr. Donald S. Martin, Duke University School of Medicine, Durham, N. C.
Dr. Henry E. Wilson Jr., Ohio State University College of Medicine, Columbus.
Dr. Victor A. Digilio, Woman's Medical College of Pennsylvania, Philadelphia.
Dr. Henry Packer, University of Tennessee College of Medicine, Memphis.
Dr. William H. Grant, Meharry Medical College, Nashville, Tenn.
Dr. Wilton M. Fisher, Baylor University College of Medicine, Dallas, Texas.
J. Carleton Casey, Ph.D., University of Virginia Department of Medicine, Charlottesville.
Dr. John W. Scott, University of Alberta Faculty of Medicine, Edmonton, Canada.
Dr. George T. Harrell Jr., Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

LATIN AMERICA

Courses in Tropical Diseases at Havana.—The University of Havana will offer courses in tropical diseases for physicians of the United States armed forces under an arrangement with the American military authorities, newspapers reported January 16.

Pediatrician Honored.—"Morquio Day" was observed by the Uruguayan Pediatric Society, Sept. 24, 1942, commemorating the seventy-fifth anniversary of the birth of Dr. Luis Morquio, the founder of the society. A memorial service was held at the foot of the Morquio monument.

FOREIGN

New Director of Lister Institute.—Dr. Alan N. Drury, Huddersfield lecturer in special pathology at the University of Cambridge and a member of the scientific staff of the Medical Research Council, will become director of the Lister Institute, London, March 31, on the retirement of Sir John C. G. Ledingham. The latter has held the position since 1936.

Personal.—Dr. Henry S. Souttar, London, chairman of the council of the British Medical Association and chairman of the Central Medical War Committee, has been made chairman of a mission to report on the medical services for the armed forces in India, according to *Science*. During his absence, Dr. Ralph M. F. Picken, Cardiff, Wales, has been appointed acting chairman of the council.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 26, 1942.

Increase of Tuberculosis in Belgium

The Swedish Committee for the Relief of Belgian Children received during November a report that the food situation in Belgium is heading for a catastrophe. It is generally estimated that 2,725 calories is the minimum necessary for maintenance of life. When the committee began to work in the autumn of 1941 the number consumed in Belgium averaged 1,300. Since then the situation has persistently deteriorated, and according to official figures the number of calories dropped to 886 in July 1942 and rose temporarily to 920 in August.

The effect of this undernourishment is appalling. It has produced an alarming increase in tuberculosis, especially among young persons and children. It is evident that if improvement of diet does not take place tuberculosis will become rife in the whole population and weaken the race. For those who have small fixed incomes it has become almost impossible to buy the few commodities still for sale, because of the increase in price.

Scientific Journals for Enemy Prisoners of War

A request for scientific journals made in the *British Medical Journal,* the scientific journal *Nature* and the *Nation* in order that they may be supplied to enemy prisoners of war has met with the following response. Fifty-eight people have sent 2,170 reprints and journals and 34 books on technical and scientific subjects for the use of scientists and physicians who are prisoners in British hands. The papers have been classified according to subjects. The special interests of the prisoners in the various camps are known, and parcels containing 956 papers and journals have been sent to 32 camps. So far only a small part of the demand has been met.

Those willing to contribute journals, reprints of books on scientific, technological or medical subjects are asked to send them to John R. Baker, Burnt Oak, Kislington, near Oxford, to write their name and address on the outside of the parcels with the letters "S. P. P." (scientific papers for prisoners) and to be patient in awaiting acknowledgment, as the classification and packing have to be done by Mr. Baker and his wife in the time they can spare from work and civil defense service. The S. P. P. has the approval of all the authorities concerned with the welfare of enemy prisoners of war.

A Safety Hat for Women War Workers

There has been no compulsory style of head dress for women working at machines in war factories, so that many have allowed vanity to override safety, with the result that hundreds of accidents have occurred from hair being caught in the machines. Careful research has been devoted to the production of caps which would be safe, but women have refused to wear them because they were not sufficiently becoming, detrimental to the hair style or uncomfortable. The directorate of a group of thirty factories therefore approached the workers and asked them to put forward their own ideas on the subject. A competition was promoted, of which the conditions were that the hat should be attractive and comfortable, contain the worker's hair with a high degree of safety, be hygienic and easily laundered, and have no loose ends. Several hundred designs were submitted. A panel of judges, consisting of a government inspector of factories and four women, selected twenty designs. They took into account the suitability of the design for manufacture in quantity as well as the amount of safety. The winning design came from a woman, to whom a prize of $250 was awarded. It is a neat fitting hat, which, viewed from the front, has a trace of military smartness but for the rest is mainly of the fish net type, enclosing the hair, yet cool to wear.

The War Work of the Society of Friends

Though the Society of Friends cannot reconcile war with their religious beliefs, they have in this war, as in the previous great war, devoted energy and resources to the relief of the suffering produced and shared much of the danger of the combatants. In the Middle East they have a unit of more than 150 members, some of whom are working under the auspices of the British Red Cross, especially on mobile surgical units. They manned a hospital at Tobruk until that place fell. The report on the third year's work describes the establishment of mobile clinics in Syria to which Moslem, Christian and Druse resort, the distribution of medical supplies on the Burma Road, the salvage of $600,000 worth of medical supplies from the Rangoon docks when the Japanese were closing in and their transport for 3,000 miles into the northern provinces of China, the provision of surgical aid for the raided towns of Burma, sending surgical teams to help the Chinese on the Yunnan front, organization of first aid posts in view of possible air raids on Indian cities and sending forty men including two doctors for medical work in outlying regions of Ethiopia, where there are few facilities for combating the high incidence of sickness. A unit for work in the emergency medical service and other hospitals in England is also maintained.

Sir Norman Walker

The death of Sir Norman Walker has removed a leading figure in the medical profession. Born in 1862, he graduated at the University of Edinburgh in 1884. After a few years in general practice he returned to Edinburgh in 1890 and spent the next few years in postgraduate study. He was attracted to dermatology and in 1892 was appointed assistant physician for diseases of the skin at the Edinburgh Royal Infirmary. He was also appointed lecturer on dermatology at the university. He visited the continent and became a disciple of P. G. Unna of Hamburg, whose pioneer work "The Histopathology of Diseases of the Skin" he translated from the German. Unna, with whom he was on intimate terms, expressed himself as fortunate in his translator. He also translated from the Norwegian Hansen and Looft's "Leprosy in Its Clinical and Pathological Aspects." In 1899 he published his most successful "Introduction to Dermatology," which went through ten editions. He had great aptitude for administration and in 1907 was elected representative for Scotland on the General Medical Council, of which he became president in 1931. On behalf of the council he paid two visits to India, where he inspected all the medical colleges and several of the numerous medical schools. From 1929 to 1931 he was president of the Royal College of Physicians of Edinburgh. He was also editor of the *Scottish Medical and Surgical Journal* and of the *Edinburgh Medical Journal.* He has left three sons, of whom, one, Dr. E. R. C. Walker, is a prisoner of war.

Marriages

William Wyatt Hoback, Bethesda, Md., to Miss Sara Florence Crockett of Hillcrest, Va., December 21.

Thomas Foster Wheeldon, Richmond, Va., to Miss Gladys Pearle Jenkins of Frostburg, Md., December 26.

Raymond Rivkin, Jamaica, N. Y., to Miss Helen Goldstein of Tampa, Fla., in Jacksonville, Fla., in October.

Joseph E. Acker Jr., Knoxville, Tenn., to Miss Elizabeth Chase Gutch of Palo Alto, Calif., November 19.

Edwin Brooks Werkheiser, Shreveport, La., to Miss Nellie Sue McNeil of Philadelphia, Miss., October 1.

Deaths

Harry **Bond Wilmer** ✦ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1906; associate professor of allergy at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; specialist certified by the American Board of Internal Medicine; member of the American Association for the Study of Allergy and the American Clinical and Climatological Association; fellow of the American College of Physicians; served as a captain in the medical corps of the U. S. Army and was stationed at Base Hospital number 10 during World War I; director of medical services and physician in chief, department of allergy, Abington (Pa.) Memorial Hospital; associate physician and chief, department of allergy, Presbyterian Hospital; aged 58; died, January 16, of heart disease.

Arthur Julius Skeel, Cleveland; University of Wooster Medical Department, Cleveland, 1897; member of the Ohio State Medical Association; formerly professor of anatomy and lecturer on obstetrics at the Cleveland College of Physicians and Surgeons; past president of the Ohio Obstetric Society; president of the Cleveland Academy of Medicine in 1925; served as president of the Hospital Obstetric Society of Ohio; fellow of the American College of Surgeons; a founder of the obstetric outpatient dispensary, consulting obstetrician and for twenty-eight years directing head of the department of obstetrics at St. Luke's Hospital, where he died, December 7, of lobar pneumonia, coronary sclerosis and hypertensive cardiovascular disease, aged 68.

George B. Kunkel, Harrisburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; fellow of the American College of Surgeons; served during World War I; on the staffs of the State Hospital for Crippled Children, Elizabethtown, the Harrisburg, Harrisburg State, Harrisburg Polyclinic and the Keystone hospitals; served as president of the Pennsylvania Railroad Surgeons' Association and as surgeon for the Philadelphia and Reading Railroad; for many years a trustee of the Gettysburg (Pa.) College; aged 74; died, December 22, of pulmonary embolism.

Fred L. Adams, Wesley, Iowa; State University of Iowa College of Medicine, Iowa City, 1898; formerly a druggist; aged 69; died, December 14, of cerebral hemorrhage and arteriosclerosis.

Mary Alice Asserson, New York; Cornell University Medical College, New York, 1901; served as assistant university physician and on the staff for twenty-four years at Teachers College, Columbia University; for many years connected with the health department of New York; at one time secretary of the children's service of the New York Tuberculosis and Health Association; aged 71; died, January 10, of carcinoma of the liver.

Charles E. Bayan, Chester, Ark. (licensed in Arkansas in 1903); member of the Arkansas Medical Society; aged 57; died, November 25, in the Veterans Administration Facility, Fayetteville, of carcinoma.

Pern Jefferson Bidwell, Toledo, Ohio; Starling Medical College, Columbus, 1904; served during World War I; on the staffs of the Lucas County and St. Vincent's hospitals; aged 63; died, December 23, of coronary occlusion.

George A. Blaylock, Perryville, Mo.; Barnes Medical College, St. Louis, 1903; member of the Missouri State Medical Association; past president and secretary of the Perry County Medical Society; aged 63; died, November 9, of carcinoma of the liver.

Thomas Emory Camper, Corunna, Mich.; Hahnemann Medical College and Hospital of Philadelphia, 1924; member of the Michigan State Medical Society and the American Public Health Association; in 1936 established and directed the Iron County Health Department and in 1940 established and directed the Shiawassee County Health Department; aged 45; died, January 3, in the Memorial Hospital, Owosso, of coronary occlusion.

Ott Casey ✦ Clinton, Ind.; Medical College of Ohio, Cincinnati, 1908; served as county coroner for two periods, and as a captain in the medical corps of the U. S. Army during World War I; formerly health officer of Clinton; aged 60; died, December 29, in the Veterans Administration Facility, Danville, Ill., of coronary arteriosclerotic heart disease.

Charles White Churchill, Thomson, Ga.; University of Georgia Medical Department, Augusta, 1909; member of the Medical Association of Georgia; served as county physician and local surgeon for the Georgia Railroad for many years; aged 63; died recently of heart disease.

Charles David Collins, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1902; served during World War I; served on the board of appeals and in various other capacities in the Veterans Administration in Washington, D. C. for many years; aged 64; died, December 21, of cerebral hemorrhage.

Raymond Lawrence J. Cooley ✦ Buffalo; University of Buffalo School of Medicine, 1913; aged 50; on the staff of the Mercy Hospital, where he died, December 22, of heart disease.

Edward Alfred Franklin, Los Angeles; Columbia University College of Physicians and Surgeons, New York, 1905; aged 58; on the staff of the Hollywood Hospital, where he died, November 4, of coronary occlusion.

Adolph Goldhammer, New York; Columbia University College of Physicians and Surgeons, New York, 1896; aged 69; died, December 27, of arteriosclerosis.

John Nelson Goltra, Evanston, Ill.; College of Physicians and Surgeons, New York, 1887; member of the Illinois State Medical Society; veteran of the Spanish-American War; formerly on the staff of the Sault Ste. Marie (Mich.) Hospital; author of "Health and Strength"; aged 83; died, January 15, of arteriosclerosis and myocarditis.

Alva Silas Grimm ✦ St. Marys, W. Va.; College of Physicians and Surgeons, Baltimore, 1885; an Affiliate Fellow of the American Medical Association; aged 85; died, December 24, of hypostatic pneumonia.

William Albright Haman, Reading, Pa.; Hahnemann Medical College of Philadelphia, 1883; founder and chief of the x-ray department since 1916, charter member and chief of the medical department since 1892, Homeopathic Hospital; aged 81; died suddenly, December 20, of coronary occlusion and arteriosclerosis.

Herbert T. Hames ✦ Jonesville, S. C.; Medical College of the State of South Carolina, Charleston, 1901; for many years a medical officer in the National Guard and at the time he was honorably discharged held the rank of captain; aged 64; died, January 4, in the Wallace Thomson Hospital, Union, of coronary thrombosis.

Edward Mitchell Harding, Newton, Mass.; College of Physicians and Surgeons, New York, 1874; member of the Massachusetts Medical Society; at one time served as second assistant physician at the Danvers State Hospital, Hathorne; aged 90; died, December 19, of heart disease.

Leo Zeno Hayes ✦ Force, Pa.; Medico-Chirurgical College of Philadelphia, 1902; on the staff of the Andrew Kaul Memorial Hospital, St. Marys; formerly surgeon for the Shawmut Mining Company, and Pittsburgh, Shawmut and Northern Railroad; aged 64; died, December 20, in the Temple University Hospital, Philadelphia, of brain abscess.

James Arthur Jones, Boston; Boston University School of Medicine, 1900; formerly assistant instructor in urinary analysis at his alma mater; served as a medical officer in the Reserve Officers' Training Corps during World War I; aged 68; for many years on the staff of the Massachusetts Memorial Hospitals, where he died, January 1, of cerebral hemorrhage.

Bertie Rozel Johnston ✦ Estill, S. C.; University of Georgia Medical Department, Augusta, 1917; served during World War I; aged 47; died suddenly, January 1, of coronary occlusion.

John Richard Keesee ✦ Huntington, W. Va.; Kentucky School of Medicine, Louisville, 1905; served overseas and as captain in the medical corps of the U. S. Army during World War I; aged 62; died, December 20, in the Veterans Administration Facility of hypertensive coronary arteriosclerotic heart disease.

Joseph Charles Kelly, Boston; McGill University Faculty of Medicine, Montreal, Que., Canada, 1938; began active duty as a lieutenant, junior grade, in the medical corps of the U. S. Naval Reserve in April 1942 and was discharged for physical disability in October 1942; served as clinical assistant in ophthalmology at the Massachusetts Eye and Ear Infirmary; aged 33; died, December 17, of coronary occlusion.

Valentine John Klein, Brooklyn; University of the City of New York Medical Department, 1887; member of the Medical Society of the State of New York; on the staff of

St. Catherine's Hospital; aged 76; died, December 28, of carcinoma of the rectum.

Hiram L. Knapp, Newark Valley, N. Y.; University of Buffalo School of Medicine, 1888; member of the Medical Society of the State of New York; past president of the Tioga County Medical Society; had been a director and president of the First National Bank of Newark Valley for many years; served as president of the village of Newark Valley and board of education; aged 75; died, December 21, of nephritis.

Albert Maxwell Lightstone, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, 1918; served as a captain in the Canadian Royal Army Medical Corps during World War I; formerly registrar of the Woman's General Hospital, Westmount; medical officer of the Montreal Sailors' Institute for many years; aged 55; died, December 11.

Samuel Gilmore Logan ✦ Ridgway, Pa.; Jefferson Medical College of Philadelphia, 1901; past president and secretary of the Elk County Medical Society; member of the Radiological Society of North America, Inc.; on the staff of the Andrew Kaul Memorial Hospital, St. Marys; physician for the Ridgway borough schools; aged 65; was found dead, December 21, of coronary disease.

John Joseph Lucy, Boston; Harvard Medical School, Boston, 1920; member of the Massachusetts Medical Society; aged 49; served on the staff of the Cambridge (Mass.) Hospital and as assistant visiting surgeon on the staff of the Boston City Hospital, where he died, December 28, of hypertensive heart disease.

Harry Found MacLeod, Boston; University of Pennsylvania Department of Medicine, Philadelphia, 1894; served during World War I; aged 71; died, December 21, in the Holy Ghost Hospital for Incurables, Cambridge, Mass., of cerebral thrombosis and pneumonia.

Reed Madden, Xenia, Ohio; Eclectic Medical Institute, Cincinnati, 1894; member of the Ohio State Medical Association; served on the staff of the Ohio Soldiers' and Sailors' Orphans' Home Hospital; aged 72; died, December 26, of carcinoma of the prostate.

Saul Marks, Philadelphia; Medico-Chirurgical College of Philadelphia, 1914; aged 48; died, December 20, in the Philadelphia General Hospital of coronary occlusion.

Floyd Osborn Mathews, Charlemont, Mass.; College of Physicians and Surgeons, Boston, 1920; aged 52; died, December 15, of cerebral hemorrhage.

Herbert Chamberlain Maxwell, Lubbock, Texas; University of Texas School of Medicine, Galveston, 1916; member of the State Medical Association of Texas; physician for the Lubbock Independent School District since 1929; member of the staff of the Lubbock Sanitarium; formerly on the staff of Dr. Greenwood's Sanitarium, Houston; aged 60; died recently of heart disease.

Maurice Carver Melrose ✦ Independence, Iowa; State University of Iowa College of Medicine, Iowa City, 1924; on the staff of the Peoples Hospital; aged 48; died, December 10, of hemorrhage due to hemophilia.

Charles E. Merriam, Rochester, Vt.; Baltimore Medical College, 1894; member of the Vermont State Medical Society; aged 78; died, December 23, of auricular fibrillation.

George W. Neilson, Milwaukee; Milwaukee Medical College, 1909; member of the State Medical Society of Wisconsin; at one time served as vice president of the Milwaukee County Medical Society; formerly associate clinical professor of obstetrics and gynecology at the Marquette University School of Medicine; during World War I served as a major in command of a field hospital in France; aged 60; died, December 1, of heart disease.

La Fayette Neufarth, Mount Healthy, Ohio; Medical College of Ohio, Cincinnati, 1883; for many years president of the school board of Mount Healthy; aged 88; died, December 22, of pneumonia.

Thomas Ignatius O'Drain ✦ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1893; aged 74; on the staffs of St. Joseph's Hospital, St. Agnes Hospital and St. Mary's Hospital, where he died, January 7, of a ruptured coronary artery.

Isadore Olef ✦ Boston; Harvard Medical School, Boston, 1926; since 1939 assistant professor of medicine at the Tufts College Medical School, where he had been teaching assistant in medicine from 1928 to 1930 and instructor in medicine from 1930 to 1939; on the staff of the Boston Dispensary and a member of the associate staff of the Joseph H. Pratt Diagnostic Hospital; aged 45; died, December 16, in Dorchester of coronary occlusion.

Darbari Ram Pal ✦ Paterson, N. J.; University of Tennessee Medical Department, Nashville, 1911; during World War I received a special presidential citation for duties on local draft board, division 5; on the courtesy staff of St. Joseph's Hospital; aged 57; died, December 16, of essential hypertension.

Fletcher Edward Peters, Defiance, Iowa; John A. Creighton Medical College, Omaha, 1904; aged 61; died, December 6, of myocarditis.

James Milton Philpot, Bowling Green, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1916; aged 57; died, December 21, in Immokalee of organic heart disease.

John W. Pinkston, Greenville, Ga.; Southern Medical College, Atlanta, 1889; member of the Medical Association of Georgia; aged 82; died, December 14, of cerebral hemorrhage.

Almon W. Pinney, Norfolk, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1900; member of the Connecticut State Medical Society; on the associate staff of the Litchfield County Hospital, Winsted; aged 65; died, December 11, of coronary occlusion.

Otis Russell Platt ✦ North Platte, Neb.; Chicago College of Medicine and Surgery, 1916; fellow of the American College of Surgeons; served during World War I; on the staff of St. Mary Hospital; aged 51; died, December 19, in Lincoln of essential hypertension.

Leopold Putzel, New York; Bellevue Hospital Medical College, New York, 1875; aged 87; was killed, December 14, when he fell from a tenth story window.

Harry Lyon Read, Louisville, Ky.; University of Louisville Medical Department, 1907; member of the Kentucky State Medical Association; aged 63; died, December 6, of coronary thrombosis.

Lloyd Wilson Rice, Montreal, Que., Canada; University of Western Ontario Medical School, London, Ont., 1928; captain in the Royal Canadian Army Medical Corps; served overseas during World War I; aged 44; died, October 31, in Brockville, Ont., of heart disease.

Heber Edward Robinson, Ogden, Utah; Jefferson Medical College of Philadelphia, 1906; member of the Utah State Medical Association; on the staff of the Dee Memorial Hospital; aged 62; died, December 9, in Livermore, Calif., of cerebral hemorrhage and chronic undulant fever.

Hendric Arnold Ross ✦ Arkadelphia, Ark.; Jefferson Medical College of Philadelphia, 1912; past president of the State Medical Board of the Arkansas Medical Society; owner of the Ross Hospital; aged 58; died, December 18, of coronary thrombosis.

James Thweatt Ross, Macon, Ga.; Jefferson Medical College of Philadelphia, 1885; member of the Medical Association of Georgia; for many years chairman of the city and county boards of health; for many years on the staff of the Macon Hospital; served as chief surgeon for the Georgia, Southern and Florida Railroad; aged 81; died, December 22, of senility.

Joseph Wilfrid Tetrault, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1903; died in December.

Frank Tornholm, Wahoo, Neb.; Omaha Medical College, 1902; member of the Nebraska State Medical Association; secretary and formerly president of the Saunders County Medical Society; served as councilor from the Sixth District Medical Society for many years; was city physician and councilman in Wahoo for several terms; aged 72; died, November 10, of cerebral hemorrhage.

Jean Archange Vernier ✦ Detroit; American Medical Missionary College, Battle Creek, 1900; formerly instructor of gynecology at her alma mater; served as a member of the medical staff of the Woman's Hospital, Detroit, and the Battle Creek (Mich.) Sanitarium; aged 68; died, December 21, of carcinoma of the stomach.

James Buchanan Wallace ✦ Saline, Mich.; Detroit College of Medicine, 1901; member of the Michigan State Medical Society; at one time a minister; served as coroner of Washtenaw County, member of the board of education and health officer of Saline village and township; aged 78; died, December 4, of diabetes mellitus.

Cadow B. Walling, Collins, Ga.; University of Georgia Medical Department, Augusta, 1902; member of the Medical Association of Georgia; physician and surgeon for the Seaboard Air Line Railway Company; aged 72; died, December 13, in the Jelks Hospital, Reidsville, of Brill's fever and pneumonia.

Bureau of Investigation

SOME MISCELLANEOUS MEDICAL FRAUDS

A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are brief abstracts of some fraud orders not dealt with previously:

Consultorio Medico Standard.—This was but one of numerous names used by an S. Kemp, or Kemps, whose full name was said to be Samuel Kemp, or Kemps, and who operated a "diabetes cure" swindle from Mexico City. Other titles for his business were Instituto Medico Standard, Clinica Medica Alemana, Maria Asuncion Figueroa, M. A. Figueroa, Juan Rodriguez Saavedra, J. R. Saavedra, Dr. R. F. Sanches and Director S. Kemps. The information that follows is taken partly from the records of the Bureau of Investigation of the American Medical Association and partly from the memorandum issued on this case by the Hon. Vincent M. Miles, Solicitor for the Post Office Department. The concern in question first came to the attention of the Bureau of Investigation in December 1937 through an inquiry from a man in Texas. He wrote that as a diabetic patient he was interested in the promoters' claim in a Mexican magazine advertisement, "Diabetics! Let me hear from you. I have cured thousands suffering from this malady—thousands here in Mexico and other Republics. . . ." The inquirer said that on writing to the advertiser he received a history blank to fill out and a request for $15 down and a second payment of $10 "when cured." As "Dr. S. Kemps" and his Instituto Medico Standard were unknown to the American Medical Association, inquiries about them were sent to two American physicians practicing in Mexico City. In answering, both implied that Kemps' concern was a quack outfit and that part of it, advertised as "Maternidad—Chile 26" specialized in abortions. One stated: "For many years S. Kemp (Samuel Kemp) ran the show alone, pretending to be a German specialist but without 'Degree revalidated in Mexico.' However, for some time now, to avoid legal difficulties he has associated with him a young doctor, Fernando M. Espinosa, graduate of the 'Universidad de Guadalajara' in 1930, who does have his title registered with the Department of Health of Mexico. Unfortunately there are no laws in Mexico permitting revocation of license for improper advertising. It got so bad about a year or so ago that rulings were passed forbidding medical advertising and modified to require all advertising to be O. K.'d by a special department of the Health Department, but that has remained a dead letter for apparently 'anything goes.'" The physician went on to say: "I had a young medical student take in a sample of diabetic urine and try and get as much information as possible. He managed to have an interview with 'Doctor' Kemps. This person is an Austrian and apparently without any formal medical education, although he claimed to have 'studied all over Europe.' . . . My informant went several times and said there were always five or six or more clients in waiting, but apparently the greater part of their work is done by mail. Kemp said it was not necessary for the patient to come in although it would be preferable, and asked for a sample of urine, which he sent to a laboratory. He made no mention of the necessity for blood examination. On seeing the laboratory report he 'guaranteed to cure' the patient in three or four months. He used a medicine given by mouth, a liquid mixture called D-B-T made especially for him by the Perez Gil Laboratories, Calz. Tlalpam 1557. . . . He spends large amounts in advertising, averages better than a column a day in the two daily newspapers (in each) and more than half a page on Sundays. . . . He boasted of having a good many clients in the United States. . . ." The other physician wrote in part about Kemps: "I do not know the nature of the treatment which he advertises for the cure of diabetes. There are two or three drugs derived from Mexican plants which are reported to have an influence on reducing the amount of sugar in the urine of diabetics, and that probably have some slight beneficial effect on diabetics. The name of one of these is tronadora; it is on the market under the name of glucolicina. The botanical name of this plant is tecomamollis. Another is called copalchi, and the botanical name of this plant is contrarea latisflora." Finally the Post Office Department at Washington began to investigate Kemps' business and found that the man was advertising in various Spanish language newspapers printed in the United States and offering "cures" for diabetes, liver trouble and sexual debility. In a test case the "customer" sent $15 by United States money order for treatment of "lost manhood." With his reply Kemps sent a short prescription in which it was suggested that for the treatment and cure of his condition the remitter take one tablet of calcium phosphate before meals three times a day and one tablet of nux vomica two hours after meals three times a day. These preparations were to be purchased by the customer from his local drugstore. Since medical evidence available to the Post Office showed that the condition loosely described as "lost manhood" is due to a large number of causes, such as advanced years, psychic influences and many diseases, including some serious ones, and that each victim of it must be treated as an individual case and, further, since Kemps' "treatment" was based on no diagnosis whatever, the business in question was declared to be a scheme for obtaining money through the United States mails by means of false and fraudulent pretenses, representations and promises. The fraud order debarring it from the United States mails was issued July 15, 1942.

Dynell Spring Water Company.—This concern had for its president a Charles A. Coey, who for at least twenty years has been exploiting the water of his so-called Dynell Springs in the southwest section of Chicago and at times has played it up in large newspaper advertisements. In a discussion of this business published in THE JOURNAL, Sept. 15, 1928, page 818, it was brought out that Coey had previously engaged in various enterprises such as trucking, livery business, and a so-called school of motoring and had solicited the public to buy stock in his Dynell concern. The claims that he has made for the water as a treatment for a great variety of diseases and conditions came to the attention of the Post Office Department, which, on May 9, 1942, ordered Coey and his company to show cause on May 28 why a fraud order should not be issued against them. On May 27 the defendant's attorney requested a postponement of the hearing date, giving as one reason the alleged fact that his clients were attempting to dispose of the enterprise and withdraw from the mail-order business, and the attorney was furnished a form of affidavit containing provisions for the abandonment of the scheme and informed that if this affidavit was duly executed by the defendant and filed with the Post Office it would be accepted as a basis for disposing of the fraud order charges. At the same time the hearing date was continued at the request of counsel. Thereafter, the same counsel, for various reasons, requested numerous postponements, some of which could not be granted, and the hearing finally took place on July 31. No appearance, however, was entered by anyone in behalf of the Dynell concern nor was any answer to the charges received. A few days thereafter a transcript of the proceedings of the hearing was given to the respondent's attorney and an opportunity was furnished him to file a brief on or before August 17. At his request he was granted at least two additional postponements, but in spite of his promise to furnish certain affidavits, this was not done. At the original hearing the Post Office reviewed the charges that Charles Coey had advertised his product, variously called "Dynell Water," "Dynell Mineral Water" and "Dynell Spring Water," under false and fraudulent pretenses, representations and promises, among which were that it "is an effective treatment for and will overcome 'diseases of the liver, gall ducts and gall bladder,' arthritis, rheumatism, arteriosclerosis, high blood pressure, diabetes, kidney trouble, stomach ulcer, stomach trouble, nephritis, and all diseases of the genito urinary tract . . . strikes the death blow to the cause of most diseases. . . ." A chemist who appeared as a witness for the government testified that his analysis disclosed that Dynell Water contained silica, ferric oxide or aluminum oxide, calcium, magnesium sulfate, chloride, sodium, bicarbonate radical as calcium bicarbonate, potassium and nitrate. Also appearing for the government was a physician who testified that he was familiar with the therapeutic effects of these various ingredients, all well known to the medical profession, and that the principal effect of the water in question, when taken as directed, would be a tendency toward laxation due principally to the presence of magnesium sulfate and it would also have a slight neutralizing and antacid effect because of the calcium bicarbonate present. He went on to show that the water did not have any significant effect on the various diseases and other conditions played up in the advertising. On Sept. 8, 1942, the Post Office Department issued a fraud order against the names Dynell Spring Water Company, Dynell Spring Water Co., Dynell and C. A. Coey, President, and debarring them from using the mails. In passing it is worth mention that an interstate shipment of Dynell Water in 1928 was declared in a district federal court to violate the Food and Drugs Act because of the false claims made for the product as a treatment of chronic constipation, ulcerated stomach, torpid liver, high blood pressure, rheumatism, gastritis, neuritis, gout, gallstones, Bright's disease, diabetes and some other things.

International Health Device Corporation and David B. Cropp.—In this department of THE JOURNAL, April 4, 1942, page 1240, appeared a lengthy report of a fraud order issued by the Post Office Department against the Pandiculator Company and Henry C. Crowell of Cleveland in the mail-order sale of "The Pandiculator." This was an alleged "spine stretching" device which had been on the market for a good many years. At the hearing of this case Crowell, a Cleveland attorney, had testified that he had purchased the business in 1918 from a David B. Cropp. It appears that Cropp in due time resumed the sale of the Pandiculator but adopted another name for his business and his device. It came to the attention of the Post Office Department that Cropp, operating under the name "The International Health Device Corporation" at New York, was putting out something known as the "Therapeutic Couch" or the "Cropp Therapeutic Couch," the description of which seems to correspond with that of the Pandiculator. Persons who answered his advertisements received a booklet, "The Human Body," which, according to the Post Office, played up the alleged efficacy of the device in stretching not only the spinal column but "the entire skeleton, the bony framework of the body, involving all its joints and articulations. The musculature, the ligaments, cartilages, and other connective tissues, the spinal cord, the spinal and sympathetic nervous systems, the blood vessels, arteries, glands, lymphatics, in short every important substance of the body, and every functioning organ, comes within the direct influence of the Science of Tension Therapy, as applied through the Cropp Therapeutic Couch. . . . We do not offer the Science of Tension Therapy, and the Therapeutic Couch as a panacea, a cure all for the ills of mankind. We do offer it as a Therapy, separate and distinct in itself. It is the most rational and universally applicable means of removing the basic causes of disease, ill health, and physical imperfection, with which we are familiar. We believe that there is no method either of medication or of hand adjustment, for the correction of diseases and abnormal conditions of the body, that can so safely be employed by 100 per cent of suffering humanity, with so certain likelihood of definite, permanent benefit, as can Tension Therapy and the Therapeutic Couch." In addition to the booklet, Cropp was said to have issued a circular which reproduced alleged testimonials from laymen, osteopaths, chiropractors and physiotherapists as to the efficacy of the couch in treating such disorders as stomach ailments, rheumatism, neuritis, diabetes, arthritis and

numerous others and also in increasing height and reducing bodily weight and waist line measurements. On Dec. 10, 1941, the Post Office Department notified David B. Cropp and the International Health Device Corporation to show cause on Jan. 6, 1942, why a fraud order should not be issued against them. After several continuances the hearing was finally held on March 18 and 19. Cropp appeared unaccompanied by an attorney and in his testimony stated that he was not a physician but had studied chiropractic; that his "couch" was safe and harmless and would accomplish the results claimed for it in the advertising. It was reported that he appeared to be in good health and did not look his sixty-six years of age, and, although he had led a life devoted almost exclusively to athletics, he attributed his physical soundness to the use of his "couch," which opinion was discounted by the government.

An expert medical witness for the Post Office testified at length, showing that Cropp's mechanism was without virtue as a corrective, curative or restorative agent and that the only effect it would produce, when used as directed, would be the stretching of the body on a straight line parallel to the spine, the amount of stretching being dependent on the amount of pressure placed on the wheels at the side of the couch by the patient. It would not, he testified, cure or correct any disease and, in fact, it might aggravate some conditions, such as tuberculosis of the spine, by the application of traction. On Oct. 3, 1942, a fraud order was issued against the names David Cropp, David B. Cropp and the International Health Device Corporation and their officers and agents. In one part of the Post Office memorandum Cropp was called Bertram David Cropp and described as formerly a director of physical education and athletics at the University of Colorado and presently the wrestling coach of the West Side Y. M. C. A. at New York.

DANGEROUS TO HEALTH

Because of Inadequate Warnings on Labels

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in those pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Hart's Compound Asthma Medicine.—Hart's Asthma Medicine Company, Buffalo, N. Y. Two consignments shipped respectively between March 15, 1940, and Jan. 13, 1941, and on Feb. 26, 1941. Composition: essentially 64 grains of potassium iodide per fluid ounce, with glycerin, water and flavoring materials including cinnamon and cardamom. Adulterated because it consisted in part of a filthy substance, namely mold. Misbranded because label failed to warn adequately against giving it to children or using it in those pathologic conditions wherein it might be dangerous to health, or to caution against unsafe dosage or methods or duration of administration or application, for protection of users. Further misbranded because label falsely represented that it was efficacious in treating asthma, including the relief of paroxysms or spasmodic attacks, bronchitis, colds and hay fever, and that it would preserve health.—[*D. D. N. J., F. D. C. 459 and 460; September 1942.*]

National Peerless Remedy.—National Pharmaceutical Manufacturing Company, Baltimore. Shipped June 20, 1940. Composition: chiefly extracts of plant drugs including aloe. Misbranded because label did not carry adequate directions for use or sufficient warnings against employment in those pathologic conditions wherein it might be dangerous to health or caution against unsafe dosage or duration of administration, for protection of users; further misbranded because label failed to bear the common or usual name of each active ingredient.—[*D. D. N. J., F. D. C. 450; September 1942.*]

O'D Easylax.—Washington Wholesale Drug Exchange (seller) and Liberty Drug Company, both of Washington, D. C. Libel instituted Jan. 9, 1941. Composition essentially phenolphthalein, aloin, strychnine, talc and calcium carbonate, with green coloring. Misbranded because label did not adequately warn against use by children, or in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe dosage or methods or duration of administration; also misbranded because label carried such false claims as "They work naturally and form no habit. . . . A home remedy for indigestion, torpid liver, chronic constipation." Further misbranded because common or usual names of active ingredients were not given on label, or a declaration of the quantity or proportion of strychnine present, and because carton and label failed to give the address of the manufacturer, packer or distributor, and the label to declare the quantity of contents.—[*D. D. N. J., F. D. C. 451; September 1942.*]

Correspondence

"THE SUPPLY OF NURSES"

To the Editor:—I trust that in view of the present acute shortage of nurses you may be able to publish this and that some hospital executive may consider and develop the plan.

When serving in the Militarized Red Cross overseas during the last war, I was assigned as an assistant surgeon to a small English hospital for French wounded, situated not far from Chaumont. I was there from April or May 1917 to January 1919. Then, as now, there existed an acute shortage of trained nurses. Yet the work of the hospital went on at all times smoothly and well in spite of this. The hospital directrice was a most forceful English woman with executive ability from whom I learned their methods of action. Our nursing force was composed of a trained head nurse, an operating room nurse and one or two other graduate nurses. The remainder were short term, intensively trained volunteer nurses. We got wounded, often direct from the front. These assistant nurses, in operating room, dressing and ward work, did their stuff well, judged by peacetime standards. Those appointed as heads of wards were resourceful and efficient.

I believe I had seen the best of trained nurses both here and abroad and so could judge nurses, for my experience had covered an internship of sixteen months in a New York hospital that employed exclusively recent graduates of training schools, an internship of three months in another, employing selected groups of pupil nurses from the New York, Presbyterian and St. Luke's hospitals, and from then until World War I in contact with surgical procedure both in Hartford and through visits to outside surgical centers. I served in Dr. Blake's Hospital in Paris in 1917 to acquire the then "war surgery."

The following is what I learned from the directrice and others concerning the composition of this group of nurses in France: 1. All were young women. 2. All volunteered to serve wherever ordered. 3. They were selected for high standards of conduct, physique and patriotism. 4. They were intensively trained, surgically, in leading hospitals, chiefly in London. 5. The term of training was four or six months; I am not certain which now, but my impression is four months. 6. All those that came to us had been again checked over by the sister of our directrice and the least desirable screened out before they sailed. By this process we got a body of nurses that for surgical work was adequate. And I feel confident that a skilled onlooker could not have distinguished them in work or deportment, if similarly garbed, from a body of trained nurses.

This method of overcoming a shortage of trained nurses in another war makes me believe that a similar procedure would give equal results today. However, there is no royal road to excellence in any field, and I fancy that the selection and training of a body of nurses such as I describe would prove an undertaking worthy of any one's best effort.

JOHN B. MCCOOK, M.D., Hartford, Conn.

MAXIMUM DOSAGE OF INSULIN

To the Editor:—In the editorial on "Insulin Resistance" (THE JOURNAL, January 2, p. 52) reference is made to the fact that a patient received 3,250 units of insulin during a period of twenty-four hours. It is commented that this was probably the largest amount of insulin ever administered to a human being.

Merely for purposes of record, may I refer to a report (Lozinski, Ezra, and Frohlich, Louis I.: Resistance to Insulin, *Canad. M. A. J.* **46**:62 [Jan.] 1942) in which is recorded the history of a patient to whom 5,780 units of insulin was administered in a period of twenty-four hours without the development of hypoglycemic shock.

EZRA LOZINSKI, M.D., Montreal.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 15-16, 1943. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Feb. 6, page 455.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, March 1-3. Exec. Sec., Mr. Everett S. Elwood, 225 S. Fifteenth St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral. Part II.* New York, May 15-16. San Francisco, May 22. Chicago, June 6-7. Final Date for filing application is 90 days prior to date of examination. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, Feb. 15-16. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville, Ky.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Various centers, Feb. 13. Candidates in military service may take Part I at their place of duty. *Oral. Part II.* Pittsburgh, May 19-25. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. Parts I and II.* New York, June 4-5. Chicago, Oct. 8-9. Final date for filing application is March 1. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* New York, June 3-5. Final date for filing application is March 1. Sec., Dr. Dean M. Lierle, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Oct. 8. *Oral.* New York, Nov. 20-21. Final date for filing applications is Aug. 1. Starting July 1, 1943, Group I will be abolished. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: Various centers, April or May. Final date for filing application is March 1. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.

AMERICAN BOARD OF SURGERY: *Written. Part I.* March 25. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Philadelphia.

Mississippi Reciprocity Report

The Mississippi State Board of Health reports 9 physicians licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners on Dec. 11, 1942. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1928)	Dist. Colum.
University of Illinois College of Medicine		(1937)	New Jersey
Louisiana State University School of Medicine		(1940)	Louisiana
Tulane University of Louisiana School of Medicine		(1938)	Louisiana
Detroit College of Medicine and Surgery		(1922)	Michigan
Western Reserve University School of Medicine		(1940)	Ohio
University of Tennessee College of Medicine		(1914), (1941)	Tennessee
Fort Worth School of Medicine		(1903)	Louisiana

School	LICENSED BY ENDORSEMENT	Year Grad.
Boston University School of Medicine		(1939)

West Virginia October Report

The Public Health Council of West Virginia reports the written and oral examination for medical licensure held at Charleston, Oct. 26-28, 1942. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Three candidates were examined, all of whom passed. Ten physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Loyola University School of Medicine		(1940)	1
St. Louis University School of Medicine		(1926)	1
Western Reserve University School of Medicine		(1933)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1940)	Illinois
University of Louisville School of Medicine		(1934), (1937), (1941)	Kentucky
University of Maryland School of Medicine and College of Physicians and Surgeons		(1940)	Maryland
St. Louis University School of Medicine		(1940)	Missouri
University of Nebraska College of Medicine		(1932)	Nebraska
Medical College of the State of South Carolina		(1929)	S. Carolina
Medical College of Virginia		(1936)	Virginia
University of Virginia Department of Medicine		(1937)	Virginia

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Sponge Allegedly Left in Bladder in Repairing Prolapsed Uterus.—The plaintiff was suffering from a prolapsed uterus, rectocele and cystocele and the physician defendant undertook surgical procedures for the purpose of suspending the uterus. Two incisions, both about 1½ inches long, were made in the vagina, one in the anterior and one in the posterior wall. The uterus had dropped into the vagina, but, according to the physician, it "didn't come clear outside; the rectum and the bladder came outside." The bladder was down as low as the uterus and "was protruding through the vaginal wall." The physician had to work close to the bladder wall, which was quite thin, but, so he testified, he did not cut the bladder. According to the patient, subsequent to the operation the physician told her that he "had had to build up a new bladder wall."

Some time after the operation the patient began to experience pain in the bladder. A roentgenogram showed a "big rock in the bladder with a little tail on it." About twenty-one months after the first operation another physician removed the stone from the bladder. Incorporated in the stone on one side was a mass of cotton gauze. Alleging that the physician had negligently left the gauze in her bladder during the first operation, which was the only operation to which she had ever submitted prior to the operation for the removal of the stone in her bladder, the patient brought suit for malpractice against the physician defendant. From a judgment for the patient, the physician appealed to the Supreme Court of Oregon.

The physician claimed that during the operation in question he had neither cut the bladder nor inserted any gauze in the bladder. Therefore, so his argument seemed to run, there was no evidence before the trial court to sustain the patient's allegation that the gauze had been left in the bladder by the physician defendant, and the trial court should have granted the motion he had made for a nonsuit or for a directed verdict in his favor. In passing, said the Supreme Court, on the propriety of denying a motion for a nonsuit or for a directed verdict for the defendant, one must take as true, even in the face of conflicting evidence, the evidence produced by the plaintiff together with every inference of fact that the jury might legally draw from it. The evidence at the trial tended to show that the bladder was exposed, that a new bladder wall was built up, that cutting was done, that gauze sponges were used in the operation and that a gauze sponge was removed from the patient's bladder twenty-one months later. The patient was entitled to show, as she attempted to do by the evidence she introduced, that the physician had had an opportunity to leave a gauze sponge in her bladder and that he was the only one who could have done the act charged. If the jury believed the evidence introduced by the patient, as it apparently did, it was justified in finding that gauze was placed and remained in the plaintiff's bladder and that the physician had an opportunity and was the only one who did have an opportunity to place it there and therefore that the defendant did the act charged.

Furthermore, continued the court, there was ample evidence concerning proximate causation and damage. There was evidence from which the jury was justified in finding that gauze was inserted by the defendant in the bladder and allowed to remain there, that in so doing he was negligent and that as a result a condition developed that caused infection and pain and required operative intervention. No question of liability for a

mistake of professional judgment was involved. It was not claimed that the gauze should have been inserted in the bladder or that, if inserted, the removal of the gauze at the time of the operation would involve any exercise of professional judgment, or that any incision of the bladder wall should have been made. The whole defense of the physician was that he had made no incision in the bladder, that he had not inserted any gauze in the bladder and that consequently no gauze had been left therein by him. The physician was not employed to enter the bladder, and no necessity to do so was shown. If he did so, even intentionally, his act would be an unauthorized deviation from his employment. On the other hand, an unintentional incision of the bladder would be evidence of negligence. While some courts have held a physician negligent as a matter of law on evidence that he inserted gauze in and failed to remove it from an incision, the court did not believe that the failure to remove sponges is in all instances negligence on the part of the physician. The court did believe, however, that evidence of failure to remove sponges does require the submission of the question of negligence to the jury, since it is prima facie negligence for an operating physician to leave a surgical sponge in a wound after the incision has been closed. *41 Am. Jur.*, p. 213. A different situation might be presented if the placing of a sponge in the bladder had been shown to be proper and the question had arisen only as to the propriety of its removal, but where the defense is that no sponge was inserted, the fact, as found by the jury, that one was inserted and permitted to remain, no good purpose therefor appearing, raised a prima facie case of negligence. The court therefore concluded that the trial court had properly refused to grant a nonsuit or to direct a verdict in favor of the physician.

During the trial a medical witness called by the patient was asked to assume that in the course of an operation for the suspension of a prolapsed uterus the operating physician placed and left gauze in the patient's bladder and to state whether in that event the physician exercised that degree of care and skill ordinarily used and exercised by physicians in the practice of surgery in the locality and under the circumstances. The witness answered in the negative. The physician contended that the question was improper because "it assumed as an absolute fact" that the operating physician had cut the bladder and placed gauze therein "when the evidence along that line was clearly speculative and conjectural." It is the peculiar function, said the Supreme Court, of the hypothetic question to assume as an absolute fact alleged conditions or events if supported by evidence and to have an opinion based on the hypothesis. The patient, in forming the hypothetic question, should not leave to speculation the facts on which the opinion was to be based. If the plaintiff asks a fair question based on substantial evidence, he may have the expert's opinion on any combination of facts he may choose. He need not include in the question all the details that appear in his own case and certainly cannot include the contradictory matter in his opponent's case. He may lay before the jury by hypothetic questions scientific inferences properly deducible from the facts supported by his evidence. The form of such questions is generally within the discretion of the trial court. The court concluded accordingly that it was proper for the trial court to permit the question propounded.

The physician next complained of certain instructions tendered by the trial court to the jury which, so he contended, stressed the question of ordinary care, ordinary skill and ordinary diligence. While such an instruction is proper in the ordinary negligence case, he insisted, since a malpractice action is not the ordinary negligence case, that such an instruction is clearly erroneous in a malpractice case in which the measure of care is that degree of care and diligence ordinarily and usually exercised by ordinarily careful physicians and surgeons under like circumstances and in similar localities. In ordinary negligence cases, so his argument went, the test is the conduct of the ordinary prudent man under the circumstances and "that a man has acted according to his best judgment is no defense," while in a malpractice action the fact that want of success is due to an error of judgment may sometimes be a defense. Even so, answered the court, in this case there was no question concerning the exercise of professional judgment, mistaken or otherwise, so far as the placing or removal of a sponge was concerned. The defendant cannot claim now that he made a mere error of judgment in failing to remove a sponge which he swears he never inserted. If the instruction of the trial court applied to this case the standard of care applicable to ordinary negligence cases, then the instruction was unduly favorable to rather than prejudicial to the physician, who was under obligation to exercise that degree of skill, care, diligence and knowledge which is ordinarily possessed by the average of the members of his profession in good standing in similar localities. But, continued the court, the jury was properly instructed concerning the defendant's duty as a surgeon. After explaining what negligence ordinarily consists of, the instruction complained of stated that ordinary care in a malpractice action means the care imposed by the law on physicians and surgeons, and the court then said, ". . . by that standard will you measure the responsibility of the defendant in this case." The court could not properly have stopped with a mere definition of negligence as in ordinary negligence cases. It was necessary to go further and apply that general concept of ordinary care to the case of a physician, but in truth the duty of care imposed on physicians and surgeons is only a special application of the general law of negligence requiring due care under the circumstances. In malpractice the circumstances are peculiar, and so the general rule is peculiarly adapted to meet them. Among the circumstances are the skill and training of the physician, the inherent difficulties of operative treatment, the impossibility of certainty in diagnosis and cure and the frequent necessity for the exercise of professional judgment, together with the advanced condition of the medical science in the community. In *Staloch* v. *Holm*, 100 Minn. 276, 111 N. W. 264, a case cited by the physician, the court, after explaining that a physician is not liable for a mere error in judgment, made the following distinction:

> When the physician is acutally operating he is employing surgery as an art, and if, for example, he . . . sew up a sponge in an abdomen he has opened, . . . his wrong concerns physical facts, and has fairly been held to be governed by ordinary principles of negligence.

The use and removal of surgical sponges, continued the court, in operative cases may involve the employment of professional skill, but the failure to remove a sponge which should never have been inserted would be evidence of negligence in the general sense that it would involve a failure to exercise reasonable care under all the circumstances. A fortiori, it would be evidence of negligence when subjected to the test employed in the case of physicians and surgeons. The court accordingly held that the instructions complained of were proper.

The judgment in favor of the patient was affirmed.—*Carruthers v. Phillips, 131 P. (2d) 193 (Ore., 1942).*

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 15-16. Dr. H. G. Weiskotten, 535 North Dearborn St., Secretary.

American Orthopsychiatric Association, New York, Feb. 22-24. Dr. Norvelle C. LaMar, 149 East 73d St., New York, Secretary.

Conference of State and Provincial Health Authorities of North America, Washington, D. C., March 22-25. Dr. A. J. Chesley, 469 State Office Bldg., St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

12:545-596 (Nov.) 1942

*Observations on Rh Agglutinogen of Human Blood. R. T. Fisk, Pasadena, Calif., and A. G. Foord, Los Angeles.—p. 545.
Magnesium Silicate Granuloma. T. L. Ramsey, Toledo, Ohio.—p. 553.
Blood Sugar Values of Blood Obtained Simultaneously from Radial Artery, Antecubital Vein and Finger. P. H. Langner Jr. and H. L. Fies, Philadelphia.—p. 559.
Studies on Platelets: III. Effect of Heparin in Vivo on Platelet Count in Mice and Dogs. A. L. Copley and T. P. Robb, Kansas City, Kan. —p. 563.
Advantage of Thioglycollate Medium in Routine Diagnostic Bacteriology. Mollie Mollov, Jeannette E. Winter and P. Steinberg, New York. —p. 571.
Urinary Phenols: II. Their Significance in Normal and Pathologic Conditions. M. Volterra, New York.—p. 580.
Xanthoproteic Index, Urea and Creatinine in Plasma of Patients with Renal Insufficiency. R. S. Hubbard, J. F. Mezen and F. E. Kenny, Buffalo.—p. 590.

Studies on Rh Agglutinogen of Human Blood.—Fisk and Foord performed tests for the Rh factor of the blood of 927 adults, of 312 infants and of 9 cases of fetal erythroblastosis. The tests were run with anti rhesus and/or human anti Rh serums. The anti rhesus serums were prepared by immunizing guinea pigs with rhesus monkey blood. The human anti Rh serums were obtained from Rh negative women who had delivered infants affected with erythroblastosis. The results of typing adult blood with the antiserums show that the incidence of Rh positive persons was 85 per cent and of Rh negative persons 15 per cent. This agrees with the observations of Landsteiner and Wiener, who reported 15.4 per cent of 448 persons to be Rh negative. The results also suggest no relationship between the presence of the Rh factor and agglutinogens A and B. The results with cord blood compared with adult blood showed a consistent difference in reactivity to guinea pig antiserums: the cord blood from the 312 infants reacted positively to these serums, whereas the reactions to two other serums supplied by two Los Angeles hospitals gave a percentage of negative reactions. Of the 191 infants typed with the human anti Rh serum, 10.5 per cent were Rh negative. The degree of agglutination in guinea pig antiserum was always much stronger with cord blood than with adult cells. It was at first suspected that these strong reactions were due to some property in the cord blood which was not altered by repeated washings in saline solution, but this seemed unlikely as blood obtained by heel puncture from 9 babies on the tenth day of life reacted in the same way.

Cancer Research, Baltimore

2:811-880 (Dec.) 1942

Inactivation and Conversion of Estrogens in Vitro by Liver and Other Tissues from Human Cancer Patients and from Mice of Strains Susceptible to Mammary Carcinoma. G. H. Twombly and H. C. Taylor Jr., New York.—p. 811.
Influence of Polished Rice Diet on Spontaneous Mammary Cancers in Mice Treated with Yeast Extract. R. Lewisohn, C. Leuchtenberger, R. Leuchtenberger, D. Laszlo and Z. Dische, New York.—p. 818.
Effect of Intravenous Glycogen Administration on Rate of Growth of Walker Carcinosarcoma 256 and Sarcoma 180. H. A. Ball, San Diego, Calif.—p. 823.
Effect of Variations in Oxygen Pressure on Tumor Transplants. M. A. Pollack, A. Taylor and C. L. Sortomme, Austin, Texas.—p. 828.
Mechanism of Action of Certain Urea Derivatives on Normal and Tumor Tissue. W. C. Grant and J. C. Krantz Jr., Baltimore.—p. 833.
Effects of Roentgen Radiation on Tumor Incidence in Drosophila Melanogaster. E. W. Hartung Jr., Cambridge, Mass.—p. 837.
Influence of Carcinogens on Age Incidence of Leukemia in High Leukemia F Strain of Mice. A. Kirschbaum, New Haven, Conn., and L. C. Strong, Minneapolis.—p. 841.

Connecticut State Medical Journal, Hartford

6:911-978 (Dec.) 1942

Recent Advances in Surgery, Particularly from Standpoint of Improving Prognosis, with Special Reference to Correction of Protein Deficiencies. R. Elman, St. Louis.—p. 913.
Intussusception in Infants. A. J. Jackson and J. J. Bowen Jr., Waterbury.—p. 916.
Clinical Study of 105 Patients Treated with Estrogen and Progesterone. S. M. Simon and A. F. Ullman, New York.—p. 921.
Influenzal Meningitis: Report of Case with Recovery. C. W. Brown, Hartford.—p. 926.
Crush, Blast and Anesthesia in War Emergencies. G. J. Connor, New Haven.—p. 928.
Wound Healing and Its Complications. S. C. Harvey, New Haven. —p. 932.
Emergency Field Treatment. P. W. Vestal, New Haven.—p. 937.

Delaware State Medical Journal, Wilmington

14:223-236 (Nov.) 1942

Civil Emergency Service. H. Van Z. Hyde, New York.—p. 223.

14:237-254 (Dec.) 1942

American Medicine and the War. M. Fishbein, Chicago.—p. 237.

Illinois Medical Journal, Chicago

82:325-404 (Nov.) 1942

Problems in War Medicine: Venereal Disease Control Since Onset of World War II. R. A. Vonderlehr, Washington, D. C.—p. 344.
Id.: Analysis of Vision of 200 Consecutive Selectees as Seen by Advisory Board Oculist. G. H. Mundt, Chicago.—p. 347.
Id.: Analysis of Cardiac Abnormalities in 460 Selectees. D. E. Markson and M. P. Gethner, Chicago.—p. 350.
Id.: Neurocirculatory Disease in the Soldier. H. A. Durkin, Peoria. —p. 354.
Id.: Incidence of Pulmonary Tuberculosis as Detected Roentgenologically in Selected Group of Inductees. E. E. Barth and Fay H. Squire, Chicago.—p. 358.
Id.: Neuropsychiatric Problems of Present War. B. Boshes, Chicago. —p. 361.
Treatment of Surgical Shock. A. M. Vaughn, Chicago.—p. 365.
*Burns Treated by Paper Tissue-Cod Liver Oil Ointment Dressing After Surgical Cleansing. G. B. Callahan, Waukegan.—p. 368.
The Doctor and the Problem Child. P. L. Schroeder and G. L. Perkins, Chicago.—p. 373.
Third Stage of Labor. R. Paddock, St. Louis.—p. 379.
Etiology and Treatment of Functional Uterine Bleeding. J. W. Huffman, Chicago.—p. 383.
Susceptibility of Adult Population to Diphtheria. A. J. Levy, Gilman. —p. 390.

Burns Treated by Paper Tissue.—Callahan states that an infected (or uninfected) burn treated by free cleansing with soapy sterile water, debrided, dried, covered directly by cod liver oil ointment and this covered by a single layer of paper tissue and redressed daily, then less frequently as required, and kept in daily motion will heal in a minimum of time with a minimum of pain and scar formation without contracture. Good surgical measures must be used. Blebs are left intact unless they break in cleansing, as then less open wound is present and less tender surface is exposed. Serum under a clean bleb does not become infected, it acts as a cushion conducive to healing, and it is reabsorbed or spills harmlessly if its covering is kept clean. Maximow showed that noncontaminated tissue bathed in its own fluids healed with rapidity and a minimum of fibroblast proliferation in the scar. To this end Callahan has used a covering that is nonadherent, is completely flexible and allows a free film of normal fluid beneath it; elevation of the burned part and daily motion prevent and minimize stasis as well as act as a prophylactic toward circulatory accidents, thrombi or emboli. Nonadherence and motion permit granulation or epithelization across the affected area that will not require stretching or breaking in subsequent therapy. The paper tissues packed in their usual store shelf manner are safe to use, although the author does autoclave or flame them. He used them for lesions many years before he autoclaved them and no infection has resulted. Blood agar plates and culture broths of newly opened commercial cod liver oil ointments revealed no growths from the surfaces or the depths of ointments. Such

data show that the paper tissue and the ointments are safe to place and use in the field, or board ship, in a home, in a hospital and in the physician's office.

82:405-482 (Dec.) 1942

The Physician and the Problem of the Alcoholic Driver. L. S. Selling, Detroit.—p. 423.
Status Asthmaticus. J. Peters, Oak Park.—p. 428.
Chemotherapy: Sulfonamides. R. F. Herndon, Springfield.—p. 435.
Perforating Gunshot and Stab Wounds of Chest. A. J. Toman, Chicago. —p. 437.
Public Health in Wartime. H. A. Holle, Chicago.—p. 440.
Present Status of Shock Therapy. S. N. Clark, Jacksonville.—p. 444.
Gallbladder Disease, with Special Reference to Alterations in Anatomy and Physiology of Gallbladder. M. E. Lichtenstein, Chicago.—p. 445.
*Kaolin-Aluminum Gel (Kalum) in Therapy of Peptic Ulcer. F. Neuwelt and F. Steigmann, Chicago.—p. 450.
The Tuberculous Obstetric Patient. F. M. Meixner, Peoria.—p. 454.
Psychotherapy in General Medicine and Surgery. T. B. Throckmorton, Des Moines, Iowa.—p. 460.

Kaolin-Alumina Gel and Peptic Ulcer.—Neuwelt and Steigmann used a mixture of alumina and kaolin (Kalum) in the treatment of peptic ulcer in 25 cases. Kalum is an amphoteric gel containing 5 per cent of aluminum hydroxide and 3 per cent of kaolin, both in colloidal form, flavored with oil of peppermint and freely miscible in water. The subjects were refractory to other treatment. The dose of the amphoteric gel varied from 1 to 2 teaspoons in a little water three times a day to as much as 4 teaspoons taken as often as every two hours during the day and as needed at night. Some patients used the preparation for several weeks whereas others used it intermittently or steadily for many months of the eighteen months of the study. Six of 15 patients under prolonged and careful observation were decidedly and quickly benefited by the medication; pain, discomfort and vomiting were relieved promptly. The 9 remaining patients found the results indifferent; only 3 of them preferred some other form of therapy. From the results the authors conclude that Kalum represents a new and valuable addition to the therapy of peptic ulcer.

Indiana State Medical Assn. Journal, Indianapolis

35:677-752 (Dec.) 1942

Kenny Treatment of Infantile Paralysis. G. J. Garceau, C. Martz and P. Reith, Indianapolis.—p. 677.
Report of Results in Kenny Method. Elizabeth Kenny, Minneapolis. —p. 679.
Kenny Method of Treatment for Infantile Paralysis. W. H. Cole, J. F. Pohl and M. E. Knapp, Minneapolis.—p. 681.
Is There a Relationship Between Poliomyelitis and Tuberculosis? Isabel Morgan, Danville.—p. 686.
Tularemia: Review and Its Present Status in Indiana. J. W. Jackson, Indianapolis.—p. 691.
Chemotherapy in Ophthalmology: Review of Recent Literature. C. W. Rutherford, Indianapolis.—p. 697.
Adequate Internal Fixation of Fractures. E. T. Stahl, Lafayette. —p. 702.

Journal of Clin. Endocrinology, Springfield, Ill.

2:671-776 (Dec.) 1942

*Comparative Study of Metabolic Effects of Estradiol Benzoate and Testosterone Propionate in Man. Kathryn Knowlton, A. T. Kenyon, Irene Sandiford, Gertrude Lotwin and Ruth Fricker, Chicago.—p. 671.
Comparison of Metabolic Effects of Testosterone Propionate with Those of Chorionic Gonadotropin. A. T. Kenyon, Kathryn Knowlton, Gertrude Lotwin, P. L. Munson, C. D. Johnston and F. C. Koch, Chicago.—p. 685.
Metabolic Response of Aged Men to Testosterone Propionate. A. T. Kenyon, Kathryn Knowlton, Gertrude Lotwin and Irene Sandiford, Chicago.—p. 690.
*Creatinine Excretion in Women: Clinical Significance in Obesity. B. N. Tager and Hazel W. Kirsch, Los Angeles.—p. 696.
Premenstrual Headache Relieved by Estrogen Therapy. B. B. Rubenstein, Chicago.—p. 700.
Ethinyl Estradiol: Clinical Evaluation. M. J. Groper and G. R. Biskind, San Francisco.—p. 703.
Male Hypogonadism: Effect of Treatment on Genital Growth and Maturity. B. N. Tager, Los Angeles.—p. 707.
Effect of Chorionic Gonadotropic Hormone and of Male Sex Hormone on Height Increase and Bone Development. M. B. Gordon and E. M. Fields, Brooklyn.—p. 715.
Urinary 17-Ketosteroid Assays in Clinical Medicine. N. B. Talbot and A. M. Butler, Boston.—p. 724.
Clinical Reviews in Andrologic Endocrinology: III. Treatment of Seminal Failure. R. L. Pullen, J. A. Wilson, E. C. Hamblen and W. K. Cuyler, Durham, N. C.—p. 730.
Endocrine Aspects of Mongolism. C. E. Benda, Wrentham, Mass. —p. 737.

Metabolic Effects of Sex Hormones.—Knowlton and her colleagues describe certain of the metabolic effects of estradiol benzoate when given intramuscularly in daily doses of 5 mg. (30,000 rat units) to 2 eunuchoids, 2 women with ovarian insufficiency, 1 of whom was masculinized, and 1 normal woman. In the 2 eunuchoids the effects are compared with those resulting from 5 mg. daily of testosterone propionate. The subjects were given weighed diets, containing the same food each day, of sufficient caloric content to maintain their weight in accordance with the particular individual's activity, desires and capacity. Testosterone propionate caused a characteristic reduction in urinary nitrogen, inorganic phosphorus, sulfate and sodium excretion. In 1 of the 2 eunuchoids, urinary potassium was reduced. Creatinuria, when sustained at high levels by creatine ingestion, was reduced by the androgen. The production of basal heat was unaltered. The estradiol benzoate in the 2 eunuchoids, 1 hypogonad woman and the normal woman reduced the urinary nitrogen, inorganic phosphorus and sodium excretion. Urinary sulfate was probably reduced in 1 eunuchoid and in the woman; otherwise it was unaffected. Creatine excretion in the eunuchoid, when sustained at high levels by creatine ingestion, was not reduced by estradiol benzoate. Basal heat was unaltered. In the masculinized girl (adrenogenital syndrome) none of the usual metabolic effects of estradiol benzoate were observed. Creatinuria was increased. Hypogonad women of short stature and with high urinary gonadotropin titers responded well to the metabolic influences of estradiol benzoate or testosterone propionate. It is not clear whether physiologic ovarian secretion exerts any general anabolic influence on nongenital tissue.

Creatinine Excretion and Obesity.—The results of creatinine determinations on 50 normal women from 20 to 45 years of age are tabulated by Tager and Kirsch. From this tabulation they derived expressions for the relationship of creatinine excretion to weight in normally proportioned and in obese woman. The optimal weights, as calculated by the method of Willoughby, were further correlated with the actual values of the creatinine excreted for the 50 women. This optimal weight is defined as creatinine-optimal weight. For a known level of creatinine excretion by a given patient (whether obese or not) the optimal weight of the patient may be determined by the application of the equation for creatinine-weight relationship established for well proportioned women. In the absence of an actual laboratory determination the creatinine excretion and the creatinine optimal weight may be calculated through a conversion equation from the Willoughby optimal weight estimation, based on bone measurements. The creatinine-optimal weight is closely compatible with clinical weight evaluations and offers a physiologic basis for the quantitative expression of the nutritional state of the adult woman. Obese women generally excrete less creatinine than the well proportioned ones and show more striking variations in the excretion levels from one individual to another at a given weight. These variations are generally in direct agreement with clinical impressions concerning the muscularity of the obese. The desirability of clinically differentiating overweight individuals on the basis of muscle mass into the macrosomic and microsomic types is suggested to facilitate further metabolic studies in obesity.

Journal Industrial Hygiene & Toxicology, Baltimore

24:243-294 (Nov.) 1942

The Physiologic Properties of Indium and Its Compounds. C. P. McCord S. F. Meek, G. C. Harrold and C. E. Heussner Detroit. —p. 243.
Toxicology of Acrylonitrile (Vinyl Cyanide): II. Studies of Effects of Daily Inhalation. H. C. Dudley, T. R. Sweeney and J. W. Miller, Bethesda, Md.—p. 255.
Centerline Velocity Characteristics of Round Openings Under Suction. L. Silverman, Boston.—p. 259.
Velocity Characteristics of Narrow Exhaust Slots. L. Silverman, Boston. —p. 267.
Atmospheric Contamination from Casting of Magnesium. C. R. Williams, Boston.—p. 277.
Some Pharmacologic Properties of Polyethylene Glycols of High Molecular Weight ("Carbowax" Compounds). H. F. Smyth Jr., C. P. Carpenter, C. B. Shaffer, Jane Seaton and Louise Fischer, Pittsburgh.—p. 281.
Absorption of Lead Tetraethyl with Radioactive Lead as Indicator. R. A. Mortensen, Loma Linda, Calif.—p. 285.
Leukotoxic Action of Benzol. D. R. Climenko, Albany, N. Y., and J. McLeod, New York.—p. 289.

Journal of Nervous and Mental Disease, New York

96:617-748 (Dec.) 1942

Assault Injuries in State Hospital. L. Carp, New York, and L. P. Hawkes, Pearl River, N. Y.—p. 617.
Peripheral Nerve Injury Following Electrical Trauma: Axillary and Radial Nerve Involvement. N. Savitsky and M. J. Gerson, New York.—p. 635.
Neurologic Complications in Mother Following Pregnancy. T. Meltzer, Brooklyn.—p. 641.
Physical, Psychiatric and Psychometric Studies of Postencephalitic Parkinsonism. D. Shaskan, Helen Yarnell and Karen Alper, New York.—p. 652.
Comparison of Schizophrenia and Manic Depression with Reference to Emotional Maturity. M. A. Durea, Columbus, Ohio.—p. 663.
Suggested Treatment of Spinal Block Caused by Spinal Adhesive Arachnoiditis by Means of Repeated Spinal Air Injection. H. D. McIntyre, Cincinnati.—p. 668.
*Use of Curare in Modifying Convulsive Shock. L. F. Woolley, J. R. Jarvis and G. S. Ingalls, Towson, Md.—p. 680.

Curare in Convulsive Shock.—Since January 1940 Woolley and his associates have administered convulsive metrazol or electric shock therapy, with rare exceptions, only after patients were adequately curarized. Of 38 patients (all other methods of treatment having failed) treated with curare-metrazol shock and/or curare-electric shock, 8 have recovered to their prepsychotic level or better, 7 are now on parole status inside or outside the hospital, 4 are slightly improved in hospital adjustment and 19 are unimproved or worse. Curare is administered intravenously, approximately 1.1 mg. per kilogram of body weight. From thirty to one hundred and twenty seconds should be taken for the injection. Maximal curarization occurs regularly between one hundred and fifty and two hundred and ten seconds after a slow intravenous injection and in thirteen to fifteen minutes after an intramuscular injection. Even if curarization is not complete (arbitrarily determined by the inability of the patient to lift his head) the severity of a convulsion is much modified by the presence of any considerable amount of curare in the circulation. Curare was effective in preventing physical injuries to patients subjected to convulsive shock therapy. It probably increased slightly the required dose of the convulsive agent. It introduces certain hazards, particularly in respiratory embarrassment or failure, but these can be avoided by proper management. Even when the patient is in serious difficulty from respiratory failure, artificial respiration, prostigmine and epinephrine are effective in preserving life. It does not seriously affect the blood pressure and heart action. In proper dosage, properly administered, it is quite safe to use. The results of treatment protected by curare are comparable to those without it.

Journal Pharmacology & Exper. Therap., Baltimore

76:189-294 (Nov.) 1942. **Partial Index**

Parenteral Use of Organic Esters. W. L. Lipschitz, S. D. Upham, C. N. Hotchkiss and G. H. Carlson, Pearl River, N. Y.—p. 189.
Anticonvulsant Action of Diphenyl Hydantoin and Some Related Compounds. P. K. Knoefel and G. Lehmann, Louisville, Ky.—p. 194.
*Experimental Production of Primary Optic Atrophy in Monkeys by Administration of Organic Arsenical Compounds. B. J. Longley, N. M. Clausen and A. L. Tatum, Madison, Wis.—p. 202.
Radioactive Tracer Studies on Arsenic Injected as Potassium Arsenite: I. Excretion and Localization in Tissues. F. T. Hunter, A. F. Kip and J. W. Irvine Jr., Boston.—p. 207.
Id.: II. Chemical Distribution in Tissues. O. H. Lowry, F. T. Hunter, A. F. Kip and J. W. Irvine Jr., Boston.—p. 221.
*Comparative Therapeutic Activity of Sulfonamides Against Bacterial Infections in Mice. E. K. Marshall Jr., J. T. Litchfield Jr., Baltimore; H. J. White, A. C. Bratton and R. G. Shepherd.—p. 226
Studies on Fate of Nicotine in Body: I. Effect of *pH* on Urinary Excretion of Nicotine by Tobacco Smokers. H. B. Haag and P. S. Larson, Richmond, Va.—p. 235.
Id.: II. Fate of Nicotine in Dog. P. S. Larson and H. B. Haag, Richmond, Va.—p 240.

Optic Atrophy from Arsenicals.—Longley, Clausen and Tatum tried to determine whether atoxyl, and the contributing agents tryparsamide, arsenical number 190 and acetarsone are capable of producing blindness in monkeys with an intact and normal central nervous system. The eyes of rhesus monkeys resemble the human eye far more closely than those of the rabbit. Such an anatomic relationship might be expected to be paralleled by a similar reactivity, but experimental work can only suggest what might happen in man and only careful clinical study will reveal what actually does happen. The administration of atoxyl, tryparsamide, acetarsone, 3-amino-4-beta-hydroxy-ethoxy-phenylarsonic acid (number 190) and 4-β-(β'-hydroxy) ethoxy-ethoxy-phenylarsonic acid (number 266), the last containing no nitrogen in the molecule, did cause blindness in monkeys. The work provides an experimental basis for detecting the blinding potentialities of arsenical compounds in man. Now prophylactic procedures designed to reduce or eliminate optic atrophy as a sequence of chemotherapy of neurosyphilis must be looked for.

Comparative Activity of Sulfonamides.—Marshall and his colleagues compared the therapeutic activity of thirty-three typical sulfonamide compounds on streptococcic and pneumococcic infections in mice. With the exception of sulfapyridine, none were found to be significantly more active than sulfanilamide against streptococcic infection, while most of them were less active. On a pneumococcic infection sulfapyridine, sulfathiazole, sulfadiazine, sulfamethyldiazine, sulfapyrazine and sulfaguanidine were all more active than sulfanilamide. All compounds which were active in vivo were also active in vitro and there appeared to be no quantitative relation between in vitro and in vivo activity.

Military Surgeon, Washington, D. C.

91:619-728 (Dec.) 1942

Measures of Preventive Medicine Recommended by Federal Medical Services to Insure Maximal Improvement of the Selectee of 1961 Over Him of 1941. A. P. Black.—p. 619.
Soviet Military Field Surgery. N. Burdenko.—p. 637.
Medical Problems in Jungle Warfare. H. P. Carter.—p. 640.
The Soldier Who Drinks Too Much. S. A. Challman and M. Moore. —p. 648.
Care and Treatment of Facial Injuries from Military Aspect. P. E. Williams.—p. 650.
Equine Encephalomyelitis. R. Randall.—p. 659.
Treatment of High Fever Following Head Injury and Suggestion Concerning Ventricular Drainage for Acute Traumatic Hydrocephalus. A. Ecker.—p. 670.
Repair of Inguinal Hernia. B. H. Henning.—p. 675.
Sulfadiazine in Treatment of Gonorrhea. J. P. Pappas.—p. 681.
Neurofibrosarcoma of Abdominal Wall with Acute Intraperitoneal Hemorrhage: Case Report. R. A. Wise and W. K. Mansfield.—p. 685.
Treatment of Compound Fractures. W. D. Davidson.—p. 688.
Ingrowing Nail. H. H. Parsons.—p. 691.
Improvised Ambulances. E. H. Perry.—p. 693.

New York State Journal of Medicine, New York

42:2175-2270 (Dec. 1) 1942

Experiences in Induction, Medical Advisory Board and Draft Board Psychiatry: Attempt to Evaluate the Present Problem. N. R. Chambers, Syracuse.—p. 2199.
Urachal Calculus, with Consideration of Associated Pathology of Urachus in Adult Life. C. G. Bandler, A. H. Milbert, New York, and J. L. Alley.—p. 2203.
Treatment of Diseases of Muscle. A. T. Milhorat, New York.—p. 2210.
Epidemiologic Aspects and Laboratory Diagnosis of Salmonella Infections. S. Bornstein, Brooklyn.—p. 2215.
Classification and Diagnosis of Lymphoid and Allied Tumors. N. C. Foot, New York.—p. 2220.
Nature of Acute Lupus Erythematosus. P. Klemperer, A. D. Pollack and G. Baehr, New York.—p. 2225.
Medical Aspects of Acute Disseminated Lupus Erythematosus. E. C. Reifenstein, Syracuse.—p. 2227.
Intracerebral Hemorrhage of Traumatic Origin: Its Surgical Treatment. J. Browder and M. F. Turney, Brooklyn.—p. 2230.

Ohio State Medical Journal, Columbus

38:1085-1180 (Dec.) 1942

Sulfonamides in Treatment of Ocular Infections. A. E. Braley, New York.—p. 1101.
Drainage in Appendicitis: From Cleveland Appendicitis Survey. R. M. Watkins, Cleveland.—p. 1107.
Role of the Physician in Industry in Control of Acute Respiratory Disease. J. H. Skavlem, Cincinnati.—p. 1109.
Uterus and Vagina, Duplex. S. W. Obenour, Zanesville.—p. 1111.
Rational Approach in Osteomyelitis of Frontal Bone Caused by Sinusitis: Report of Twelve Cases. R. G. Means, Columbus.—p. 1113.
Alopecia Areata. H. A. Haynes Jr., Akron.—p. 1116.
Pessaries in Office Practice. W. H. Weir, Cleveland.—p. 1118.
Prophylaxis in Pertussis. C. W. Wyckoff, Cleveland.—p. 1122.
Essential Hypertension: Observations and Correlation of Some Significant Factors. D. E. Yochem, Columbus.—p. 1127.
Importance of Cobalt in Nutrition. J. Forman, Columbus.—p. 1131.
Chronic Granulomatous Pyogenic Liver Abscess: Case Record Presenting Clinical Problems. R. M. Woolford and Pearl M. Zeek, Cincinnati.—p. 1133.

Public Health Reports, Washington, D. C.

57:1715-1746 (Nov. 13) 1942

Isolation of Haplosporangium Parvum N. Sp. and Coccidioides Immitis from Wild Rodents: Their Relationship to Coccidioidomycosis. C. W. Emmons and L. L. Ashburn.—p. 1715.
Chaulmoogra Oil in Treatment of Leprosy. G. W. McCoy.—p. 1727.
Antricola New Genus, Amblyomma Gertschi New Species and Notes on Ixodes Spinipalpis (Acarina: Ixodoidea). R. A. Cooley and G. M. Kohls.—p. 1733.

57:1747-1790 (Nov. 20) 1942

Chloracne from Cutting Oils. L. Schwartz and F. A. Barlow.—p. 1747.
Location and Movement of Physicians, 1923 and 1938—Turnover as Factor Affecting State Totals. J. W. Mountin, E. H. Pennell and Virginia Nicolay.—p. 1752.
Disability Table for Urban Workers. H. F. Dorn.—p. 1761.

Rhode Island Medical Journal, Providence

25:241-254 (Dec.) 1942

Fears of Infancy and Early Childhood. H. E. Utter, Providence.—p. 241.
Premedical Education in Wartime. J. W. Wilson, Providence.—p. 247.

Southern Medical Journal, Birmingham, Ala.

35:1051-1126 (Dec.) 1942

The Unknown Man in Medicine. M. P. Neal, Columbia, Mo.—p. 1051.
*Acute Hematogenous Interstitial Nephritis. W. R. Mathews, Shreveport, La.—p. 1055.
*Hyperactive Carotid Sinus Reflex with Electrocardiographic Changes During Mechanically Induced Syncope: Case. I. A. Gail, Lexington, Ky.—p. 1063.
Study of Incidence of Tricuspid Regurgitation at Large General Hospital in the South: Report of Two Cases. T. Winsor and G. E. Burch, New Orleans.—p. 1065.
*Choline Chloride in Treatment of Icterus Gravis Neonatorum. P. G. Danis and W. A. D. Anderson, St. Louis.—p. 1070.
Eclectic Technic for Intracapsular Extraction of Cataract. J. Green, St. Louis.—p. 1076.
Treatment for Fractured Clavicle by Traction. F. G. Hodgson. Atlanta, Ga.—p. 1079.
Hardware Store Surgical Instruments. W. C. Basom and L. W. Breck, El Paso, Texas.—p. 1081.
Treatment of Slipped Upper Femoral Epiphyses. W. K. West, Oklahoma City.—p. 1082.
"Pentothal" Sodium (Sodium Ethyl Thiobarbiturate), Combined Anesthesia. H. S. Phillips and L. J. Miller, Atlanta, Ga.—p. 1086.
Emergency Vein. M. E. Phelps, El Reno, Okla.—p. 1091.
Lymphopathia Venereum, Autoserum as Specific Antigen. M. M. Marks, Kansas City, Mo.—p. 1092.
Bundle Branch Block: Etiology and Prognosis. N. Bloom and L. D. Policoff, Richmond, Va.—p. 1097.
Intestinal Rupture Following Patient's Attempt to Reduce His Hernia. F. J. Kirby and N. E. Needle, Baltimore.—p. 1101.
Health Service and the War Effort. I. C. Riggin, Richmond, Va.—p. 1101.
Training of Medical Technologists as Function of Medical School. L. W. Diggs, Memphis, Tenn.—p. 1104.

Hematogenous Interstitial Nephritis.—In 7 cases of renal suppression due to hemoglobinuria (blackwater fever in 3 and hemolysis due to drugs in 4) it was not always possible, according to Mathews, to relate the interstitial inflammatory reaction to areas with tubular damage. The distribution of the exudate in the subcortical and cortical zones suggested, for the most part, that it was secondary to tubular damage. However, cellular extensions along the interlobular vessels in the cortex, cellular foci and edema in the pyramids in some of the cases appeared to have developed as an independent process. Oliguria or anuria not due to ordinary forms of renal disease, low blood pressure or dehydration may be encountered in a variety of infectious states, hepatic necrosis and excessive intravascular hemolysis. The suppression may terminate spontaneously in diuresis and recovery or may end in death from uremia. In fatal cases the kidneys are usually swollen and show the structural changes of acute interstitial nephritis. Morphologically the condition is characterized by the interstitial lesion, and, while its degree may vary, there are no structural details of the exudate itself that distinguish the disease processes of which it is a complication. The lesion is a structural manifestation of hyperergy in hemolytic streptococcus infection and is believed to have the same significance in interstitial nephritis associated with excessive intravascular hemolysis and hepatic necrosis. The theory that renal insufficiency in hematogenous interstitial nephritis is a functional manifestation of a hyperergic reaction has the advantage that it covers the full scope of functional abnormalities that might be concerned in the production of suppression and it is reasonably well supported by the structural changes and clinical facts.

Hyperactive Carotid Sinus Reflex.—A case of the vagal bilateral type of hyperactive carotid sinus is presented by Gail in which an electrocardiogram made during mechanically induced syncope revealed prolonged ventricular asystoles ranging up to 3.8 seconds and auriculoventricular blocks. This disturbance of cardiac action resulted in cerebral anoxemia which caused syncope. Atropine sulfate abolished the cardiographic and clinical signs of carotid sinus sensitivity, thus establishing the diagnosis and therapeutic criteria of the case.

Choline Chloride and Icterus Gravis Neonatorum.—Danis and Anderson studied the fat metabolism of 3 infants with icterus gravis neonatorum with a favorable outcome and the morphologic changes of 4 infants who died. During the course of the disease the prothrombin time of 2 infants was abnormally high. Bile salts 1 to 2 grains (0.06 to 0.13 Gm.) daily with vitamin K were administered, but this did not alter the prothrombin time. Vitamin K hypodermically failed to reduce the prothrombin time, suggesting that the abnormal prothrombin time was not dependent completely on the absorption of vitamin K. Because of the close relationship between fat metabolism and vitamin K it seems possible that faulty fat metabolism in the liver prevents normal prothrombin formation. Microscopic study of the liver of babies dying of icterus gravis showed fatty infiltration and hemopoietic activity. It is believed that the elixir of choline chloride that was added to a special feeding formula of the infants that recovered was effective in their cure. It appeared that the rate of recovery was definitely accelerated by the choline. An infant so treated but not completely recovered died after pneumonia developed. Although clinically typical, postmortem examination revealed a normal liver and spleen without fatty deposits. Therefore it appears that a diet of vegetable fat supplemented by labile methyl containing choline chloride and labile methyl containing casein is indicated for treating the faulty fat metabolism found in the hepatic dysfunction of icterus gravis.

Southwestern Medicine, Phoenix, Ariz.

26:355-406 (Nov.) 1942

Treatment of Hydronephrosis. F. Hinman, San Francisco.—p. 357.
Surgery of Thyroid Gland. H. A. Barnes, Flagstaff, Ariz.—p. 368.

Virginia Medical Monthly, Richmond

69:651-710 (Dec.) 1942

Loyalty to Selective Service Physicians. E. T. Trice, Richmond.—p. 651.
Focal Infections. A. C. Woods, Baltimore.—p. 652.
Infections of Hand. R. H. Grubbs, Christiansburg.—p. 668.
War and Its Effect on the Mental Health of the Armed Forces. D. A. Thom, Boston.—p. 672.
Hydatidiform Mole: Report of Six Cases. W. C. Winn and H. H. Ware Jr., Richmond.—p. 678.
*Recent Mortality from Malaria in the United States. J. B. Nichols, Washington, D. C.—p. 681.
Medical Service to the Sick and Wounded. F. W. Rankin, Washington, D. C.—p. 682.

Mortality from Malaria.—In 1900 the death rate for malaria in the census registration area of the United States was 7.9 per hundred thousand. Under the vigorous antimalarial procedures then instituted the rate declined to 3.9 in 1905. From 1905 to 1937 the rate fluctuated from 3.8 to a minimum of 1.9 in 1926, without much change in the general trend. The statistics for 1938, 1939 and 1940 show such a significant change in the trend that Nichols presents them. For 1938 the death rate was 1.8, for 1939 it was 1.3 and for 1940 it was 1.1. The annual mortality for the entire period 1930 to 1940 shows that since 1937 there has been a sharp and continued decrease in mortality from malaria in the United States. This suggests that new conditions antagonistic to the disease have been established. The most obvious explanation for the decrease in mortality is that it was the result of the energetic and extensive antimalarial measures that were being carried out in the South, where most of the deaths from malaria in the United States occur.

West Virginia Medical Journal, Charleston

38:429-478 (Dec.) 1942

Precordial Pain. G. C. Griffith, Philadelphia.—p. 429.
Recent Advances in Chemotherapy. W. H. Barker, Baltimore.—p. 442.
Hospitals in the War. P. V. McNutt, Washington, D. C.—p. 453.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

4:121-182 (Oct.) 1942

Hemiplegia in Cyanotic Congenital Heart Disease. Beryl Corner and B. Perry.—p. 121.
Congenital Pulmonary Atresia with Cerebral Thrombosis and Hemiplegia. A. Hunter and J. M. Lipscomb.—p. 124.
*Partial Heart Block Due to Digitalis. M. Campbell.—p. 131.
*Blood Pressure and Old Age. T. H. Howell.—p. 143.
Transient Inverted T Waves After Paroxysmal Tachycardia. G. M. Currie.—p. 149.
*Prognosis in Paroxysmal Tachycardia and Paroxysmal Auricular Fibrillation. W. T. Cooke and P. D. White.—p. 153.
Fainting and Fits in Cardiac Infarction. H. Cookson.—p. 163.

Partial Heart Block Due to Digitalis.—The series of 170 cases of partial heart block were obtained by Campbell from the ten thousand consecutive electrocardiograms taken at Guy's Hospital from 1927 through 1938. There were 141 cases with a prolonged PR interval but no higher degree of block and 29 who also at times had partial heart block with dropped beats. In 26 of the 170 treatment with digitalis was the sole or the important cause of the block and in another 6 it was the probable cause. In those with partial heart block and dropped beats and in those with latent heart block the PR interval averaged 0.21 second. In only 3 of 23 was the PR interval below 0.18 second. When there were no dropped beats, the PR interval was on the average increased to 0.26 second. When there were dropped beats there were most often two responses before the dropped beat and the lengthening PR intervals averaged 0.22 second, 0.37 second, dropped beat and the like. This was the average of very varied figures. No special difference could be found between the groups with these different responses. Apart from the presence of latent heart block the etiology of the underlying heart disease did not seem of importance, though congestive failure was usually the indication for digitalis. The presence of a concurrent infection seemed the next most important factor. When there were dropped beats, more than half of the patients had some active infection. With latent heart block active infection was present less often, but it was the cause in a few. Large amounts of digitalis were rarely the cause. In general there seemed to be no severe ill effects even with dropped beats, and the block passed off within two or three days. There seems no reason why the presence of a latent heart block should prevent adequate treatment with digitalis when indicated, but the patient must be watched more carefully than usual.

Blood Pressure and Old Age.—Howell determined the blood pressure of 120 Chelsea pensioners, all veterans of the British army, aged from 65 to 92. Weekly variations of pressure, within narrow limits, were frequent. Infections, especially those present with diarrhea or prolonged pyrexia, almost always caused a fall in blood pressure. Three main types of blood pressure were observed: The first was of those whose systolic pressure remained above 160 mm. This was classed as raised blood pressure and included 42 per cent of the total persons. The second was of those with a systolic figure below 160 but above 115 mm. and the third was of those with a systolic pressure below 115 mm. and included 5 per cent of the total. Although the grouping is arbitrary it did correspond with certain clinical classes. Cancer, cardiac failure and infections often lowered the blood pressure. Pronounced arteriosclerosis, in the absence of a raised blood pressure, was usually associated with a poor physical condition. It is suggested that the raised blood pressure of old age is a form of compensation tending to prevent ischemia of vital structures.

Prognosis of Paroxysmal Tachycardia.—From the private case records of White and those of the Massachusetts General Hospital Cooke and White collected 750 cases of paroxysmal auricular tachycardia between 1928 and 1938. The likelihood of any particular attack ceasing, in spite of the most alarming symptoms, is practically certain. The death of only 7 patients of the series was due, directly or indirectly, to a paroxysm. When a patient who is seriously ill has an attack the occurrence must be regarded with some apprehension, and heart failure as a result of the attack may lead to the formation of intracardiac thrombi and subsequent emboli. Paroxysmal auricular tachycardia in apparently healthy persons seems to have no effect on the prospect of their longevity. When it occurs late in life its prognosis in general is that of the underlying heart disease. Paroxysmal auricular fibrillation is probably common. When the patient is younger than 40 it may be considered to have no prognostic significance, while in later life it may be the first sign of a serious heart disorder. The frequency or the duration of the attacks of paroxysmal auricular tachycardia and fibrillation cannot be foretold.

British J. Children's Diseases, Dorking, England

39:97-124 (Oct.-Dec.) 1942

*Achlorhydric Hypochromic Microcytic Anemia in Child Eight Years Old: Case. J. V. Dacie and P. Ellman.—p. 97.

Achlorhydric Hypochromic Microcytic Anemia.—Achlorhydric hypochromic anemia is usual only in women between 35 and 50. Dacie and Ellman report its occurrence in a girl of 8. The child's response to iron therapy was satisfactory; achlorhydria persisted when the blood count was normal.

British Journal of Radiology, London

15:307-340 (Nov.) 1942

Radium Treatment of Cancer of Vagina. M. Lederman and W. V. Mayneord.—p. 307.
Chronic Subperiosteal Abscess. J. F. Brailsford.—p. 313.
Direct-Reading Radon Meter for Clinical Purposes. F. T. Farmer. —p. 318.
Effect of Ionizing Radiations on Broad Bean Root. L. H. Gray and J. Read.—p. 320.
Osteochondritis in Sesamoid of Second Metatarsal: Case. A. S. Johnstone.—p. 337.
Filling Defects Within Barium Filled Duodenal Cap: Case Report. C. W. Horncastle.—p. 339.

British Medical Journal, London

2:535-566 (Nov. 7) 1942

Clinical Significance of Rh Factor. K. E. Boorman, B. E. Dodd and P. L. Mollison.—p. 535.
*Treatment of Shock by Direct Action on Vegetative Nervous Centers. Lena S. Stern.—p. 538.
Recent Trends of Some Infectious Diseases. W. J. Martin.—p. 540.
Reduction of Old Standing Dislocation of Knee Joint. F. P. Fitzgerald. —p. 542.

Treatment of Shock by Action on Nervous Centers.—Stern points out that the ordinary methods of combating shock generally do not give positive results because they do not influence the condition of the central nervous system. These negative results may be explained by the presence of the hematoencephalic barrier. Medicinal substances introduced into the circulation have no effect on the central nervous system, whereas the introduction directly into the cerebrospinal canal, particularly into the ventricles, often has a decided effect. To obtain a positive effect the substance should be introduced intrathecally. This applies particularly to substances normally present in the cerebrospinal fluid and the blood, such as potassium, calcium salts and certain hormones. The antagonism between the central and peripheral parts of the vegetative nervous system, as regards their reaction to the same substance, explains the absence of a positive antishock action of medicinal substances when introduced directly into the circulation. Actually, if these substances do penetrate the central nervous system, particularly the vegetative centers, they may produce an opposite effect and thereby neutralize the immediate action which they have produced on the peripheral vegetative organs. To produce a direct action on the vegetative nervous centers the substance should be administered directly into the cerebrospinal fluid. The given substance should be introduced into the ventricles of the brain, as its introduction into the subdural or subarachnoid space is usually without effect because it passes rapidly from the cerebrospinal fluid into the blood stream and does not come into contact with the nervous centers. In the last phase of traumatic shock there is first a considerable fall in the tone of the sympathetic nervous system and a partial rise in the parasympathetic tone. The most effective way of combating traumatic shock in its

later phase is to raise the tone of the sympathetic centers by direct action of the vegetative centers; potassium phosphate does this simultaneously. By direct action on the nervous centers the ionic potassium causes an excitability of the sympathetic nervous centers, whereas the ionic phosphate, by concentrating the ionized calcium, decreases the tone of the parasympathetic nervous centers. Potassium phosphate as an antishock remedy is indicated in all those cases in which the tone of the sympathetic nervous centers is decreased. Potassium phosphate must never be used in cases in which the excitability of the sympathetic nervous centers is increased, such as sometimes occurs in the first stage of shock. If hemorrhage is present it must be arrested, because the rise in blood pressure from potassium phosphate will definitely increase it. To avoid a repetition of shock after potassium phosphate is given, the actual cause of shock, in particular painful stimuli, must be removed. Potassium phosphate is introduced directly into the ventricles by cisternal puncture. The fluid (1 cc. of a solution of potassium phosphate in a concentration of 1/6 gram molecule with a p_H of 7.6) must be introduced with a definite pressure and the direction of the needle must be correct. The patient must be in the horizontal position preferably on the left side, with the head lower than the body.

Edinburgh Medical Journal

49:657-720 (Nov.) 1942

Spinal Atrophic Paralysis. D. Leys.—p. 657.
Concerning Cancer. F. E. Reynolds.—p. 663.
Differential Diagnosis of Chronic Affections of Lungs. C. Cameron.—p. 673.
Problem of Perirectal Suppuration. T. M. Millar.—p. 691.
Chronic Fluorine Poisoning (Fluorosis) Signs and Symptoms. L. Spira.—p. 707.

Lancet, London

2:531-562 (Nov. 7) 1942

*Syncope in Blood Donors. Faith C. Poles and Muriel Boycott.—p. 531.
Migration of Foreign Bodies. L. Rogers.—p. 535.
*Capillary Fragility (Resistance): Negative and Positive Pressure Test Compared. G. H. Bell, S. Lazarus, H. N. Munro and H. Scarborough.—p. 536.
*Vitamin C Nutrition: In Royal Navy and in Section of Civilian Population During Wartime. Geraldine Z. L. McNee and J. Reid.—p. 538.
Epilepsy. A. Feiling.—p. 540.
Ehrlich's Diazo Reaction and Sulfapyridine. J. M. Kennedy.—p. 543.
Lateral Sinus Thrombosis: Case. A. G. Tresidder.—p. 543.

Syncope in Blood Donors.—Poles and Boycott state that among the first 10,000 voluntary blood donors, a tenth of the yearly number, 2.8 per cent fainted. Their investigation as to whether any particular type of donor is likely to faint and whether prophylaxis is feasible reveals that fainting after the removal of blood affects the two sexes and different builds of people equally but is more common among the young. The incidence is raised by increasing the amount of blood withdrawn from 440 to 540 cc. but not by increasing the speed of withdrawal, and by bleeding tired and hungry people but not by a moderately hot and humid atmosphere. The effect of fatigue is difficult to assess, as now many donors are working longer hours than they have ever before and it is difficult to decide who is and who is not fit to give blood. It seems, however, that a man who is used to night work can be bled when he gets through without any ill effects, while to bleed an air raid warden after an unaccustomed night up will often cause fainting. Seltsovsky (1940) also considered that hunger and fatigue were the two most important causes of fainting by blood donors. The loss of 440 cc. of blood leaves 97 per cent of blood donors apparently unaffected, and if there is any fall in blood pressure it is small. This fall cannot be reduced by a previous rest, as emotional tension prevents the systolic pressure from assuming its usual stable level. The donors who show the biggest drop in blood pressure also show a slowing of the pulse rate. In those who faint at the end of bleeding the onset of symptoms is almost always associated with a fall in blood pressure and pulse rate. An orthostatic fall in blood pressure may be a temporary phenomenon due to blood loss. It is maximal five to ten minutes after the donor gets up and accounts for one type of delayed syncope. The most dangerous type of faint is that which occurs a half to six hours after bleeding when the donor is back at work or out in the street. A number of these donors have a transient orthostatic hypotension after being bled, and if it is detected subsequent fainting can probably be prevented by additional rest. Prophylactically, 40 Gm. of dextrose to donors was without effect on the rate of fainting, but for men from hot workshops the rate was suggestively (though on the numbers observed not quite significantly) reduced by the ingestion of a liter of isotonic solution of sodium chloride some hours before bleeding. By this procedure the general rate was reduced to 1.75 per cent among the last 2,772 donors bled.

Capillary Fragility.—The capillary fragility or resistance as determined at the same session by Göthlin's method of positive pressure and the method of Dalldorf and Russell for negative pressure was compared by Bell and his co-workers in 142 apparently healthy second year medical students between 18 and 23. The correlation was low; in some persons a high negative pressure (500 mm. of mercury) produced no petechiae, in others the critical pressure was accidentally overshot so that several petechiae were produced. With the low correlations of 0.29 obtained, it is not possible with any degree of accuracy to predict a negative pressure reading from a given positive pressure reading or vice versa. If the data are treated as a grouped series according to the positive pressure readings (or alternatively the negative pressure readings) the low correlation becomes more apparent. Each of the tests is consistent within itself. The correlation between readings of one test in different areas varied between +0.77 and +0.89. The problem as to which of the two methods is preferable is not brought nearer solution, nor is any light thrown on the relative importance of vitamins C and P in increasing the resistance of the capillary walls.

Vitamin C Nutrition.—The occurrence of sore and bleeding gums in naval ratings and trawler crews which was being labeled scurvy or subclinical scurvy without adequate investigation prompted the authorities to investigate the state of vitamin C nutrition in the Royal Navy. The investigation, McNee and Reid say, was carried out chiefly by assessing the tissue reserves of ascorbic acid. For control a group of men of similar age and social status engaged in war work in a large motor engineering works was used. Also 9 cases of fully developed scurvy in the wards of the Western Infirmary, Glasgow, during the time the naval investigation was in progress were available. The 9 examples of genuine scurvy in adults do not represent any increase due to war conditions. They were collected to aid the work and would ordinarily have been treated in a number of different hospitals. Most of the 392 Royal Naval ratings and the 176 civilian engineers, whose main sources of vitamin C were potatoes and vegetables, required respectively three and four test doses of 700 mg. of ascorbic acid for saturation in the autumn as compared to five test doses in the spring. Six naval ratings showed sore and bleeding gums out of 118 tested, but it was not possible to associate this with vitamin C deficiency. The ratings of the Royal Indian Navy had lower tissue reserves of vitamin C, yet their teeth and gums were perfect. Evidently good oral hygiene is of major importance in maintaining healthy teeth and gums. The capillary resistance test was of no value in assessing the state of vitamin C nutrition. No relation could be established between the number of petechiae induced and the saturation test. The test was positive in only 1 of 5 patients with fully developed scurvy. In healthy adults, who rely almost entirely on potatoes and vegetables for vitamin C, saturation, as a rule, is extremely deficient. If the present standard of diet is maintained, an outbreak of scurvy is not likely. In adults, at least (growing children are not considered), vitamin C is mainly concerned with tissue repair. In health and ordinary circumstances of service and work the maintenance requirements of this vitamin are small but have not yet been determined accurately.

Medical Journal of Australia, Sydney

2:353-370 (Oct. 17) 1942

Pulmonary Tuberculosis: The Adelaide "Health Survey." D. R. W. Cowan.—p. 353.
X-Ray Health Survey Conducted by the Adelaide Local Board of Health, with Report on First 10,048 Attendances. H. K. Fry.—p. 357.

Dermatologica, Basel

85:378-430 (June) 1942. **Partial Index**

*Bacteriologic and Serologic Studies on Treatment of Gonorrhea with Sulfathiazole. A. Schnetz.—p. 377.
Bilateral Atrophic Sclerosis of Testes Due to Virus of Nicolas Favre's Disease (Venereal Lymphogranuloma). A. Midana.—p. 403.
Cutaneous Necrosis Due to Indelible Pencil: Case. L. Darabos.—p. 411.

Sulfathiazole Therapy of Gonorrhea.—Schnetz points out that the extraordinary variations in the dosage of the sulfonamides required to effect a cure indicate that the mode of action of this therapy is a complex function with distinct variants. The mode of action of the sulfonamides comprises two phases: inhibition of bacterial growth by fixation of the sulfonamide on the bacterium and destruction of the damaged microbes by phagocytosis and bacteriolysis. The fact that with some sulfonamide compounds fresh cases of gonorrhea responded less favorably to treatment than the older cases indicated the involvement of a third factor, namely immunobiologic processes. The dependence of the efficacy on the duration of the gonorrhea, however, is not as striking a factor with the new and more potent preparations. The author describes investigations on the significance of the two main factors, parasite and host, for the success of the chemotherapy of gonorrhea. The sulfathiazole sensitivity of gonococci fluctuates in culture experiment between 1:500 and 1:128,000. Habituation of the gonococci to the chemotherapeutics can be observed in vivo and in vitro. The gonococcidal properties of the human serum have a thermostable and a thermolabile component and seem to be nonspecific and differ individually. Cases of gonorrhea in which chemotherapy fails often show a high serum resistance. The author regards the following as essential factors in successful chemotherapy of gonorrhea: chemosensitivity of the bacteria, the nonspecific gonococcidal activity of the serum and the concentration and duration of action of the drug in the body.

Schweizerische medizinische Wochenschrift, Basel

72:781-804 (July 18) 1942

Present Status of Thoracic Surgery. A. Brunner.—p. 781.
Temporary Pulmonary Infiltrates. R. Staehelin.—p. 785.
Hormonal Equilibriums. I. Abelin.—p. 788.
*Prostigmine in Tinnitus Aurium. F. Ysander.—p. 793.
Intracutaneous Suture. R. von Fellenberg.—p. 795.
Changes of Hypophysis after Roentgen Irradiation of Testes. C. A. Joël.—p. 795.
Researches on Vitamin C. P. Barrelet.—p. 796.

Prostigmine in Tinnitus Aurium.—Ysander administered prostigmine to 27 patients with tinnitus aurium. In some of his cases impaired hearing was also improved and occasionally this improvement was so pronounced that the patients reported it spontaneously. In order to eliminate the subjective factor as much as possible, the patients were either not told the purpose of the injections or were told that the results might be positive as well as negative. They were urged to watch the effect on the tinnitus, the hearing and the general condition. As a rule, patients were given ten injections of 1 cc. of prostigmine methylsulfate (1:2,000 solution). The injections were given at intervals of three or four days. This was followed by taking orally 3 tablets of prostigmine bromide daily for several weeks. Some patients reacted favorably after the first few injections. When the effect proved only temporary a new series of injections was given after an interval of one or two months. Most of the patients had previously been treated unsuccessfully by other methods. In the favorably reacting cases the endoauricular sounds were reduced approximately an hour after the injection, and thus improvement persisted longer after successive injections so that after from four to six injections the improvement persisted for the entire interval. Continued oral medication maintained the improvement for a time. The injections produced favorable effects in some and no effect in others. The complete series usually resulted in some improvement. The treatment was completely successful in 2 cases and gave favorable results in 13, irregular results in 10 and none in the remaining 2. The substance probably acts directly on the labyrinth.

Boletín de los Hospitales, Caracas

41:115-170 (May-August) 1942. **Partial Index**

*Lymphogranuloma Venereum (Nicolas Favre or Fourth Venereal Disease): Surgical Therapy of Anorectal Localization. A. Borjas.—p. 115.
Auricular Flutter Precipitated by Ouabain Injection in Previously Digitalized Patients: Case. R. Zubillaga.—p. 145.

Lymphogranuloma Venereum.—According to Borjas the most frequent seat of localization in 250 cases of lymphogranuloma venereum was the entire segment formed by the anus, the rectum and the sigmoid flexure. From here the disease progressed to the perineum and the external genitalia. The disease is caused by a filtrable ultravirus the presence of which can be demonstrated by the allergic reaction to Frei's antigen. It is a special type of a sclerosing adenolymphocellulitis of the lower segment of the genitourinary tract and of the rectum combined with a sclerosing rectitis. Chronic stenosing rectitis is the most frequent clinical form. It is more grave than the acute lymphogranulomatous rectitis and chronic rectitis without stenosis which are the early and the intermediate stages of the disease. Chronic stenosing rectitis is more frequent in women than in men. It develops along with other venereal infections, especially with syphilis. The local symptoms are those of a chronic rectitis, with more or less acute stenosis, local edema, multiple fistulas, abscesses and elephantiasis. Large rectovaginal fistulas are frequent. The general symptoms are those of acute toxemia and stercoremia. Cachexia occurs relatively quickly in untreated cases. The therapy consists of a permanent colostomy. If the latter fails, radical excision of the rectum, as extensive as in cancer, is indicated.

Hospital, Rio de Janeiro

21:643-794 (May) 1942. **Partial Index**

*Sclerous Congestive Splenomegaly and Cardiac Insufficiency; Indications and Opportunity of Operation. Annes Dias.—p. 643.
Scorpion Poisoning: Effects on Vision. O. de Magalhães.—p. 709.
Plaster Casts in Local Therapy of Burns: Modern Conceptions on Causes of Death in Burns. E. Balesdent.—p. 753.

Splenectomy for Sclerous Congestive Splenomegaly.—Annes Dias reports that a man aged 36 experienced one hundred and thirty rectal and ten oral hemorrhages in the course of fourteen years. A clinical and roentgenologic diagnosis of splenomegaly and Laënnec cirrhosis was made early in the course of the disease. Roentgen therapy was not tolerated; four applications caused severe leukopenia. The Wassermann reaction was negative. Calcium, liver and antisyphilitic therapy failed. When seen by the author the patient presented symptoms of cardiac insufficiency and ascites. He was put to bed and given the proper treatment for his heart condition, vitamins B and C in large doses and liver extract. Splenectomy was performed two months later. The liver appeared normal; the removed spleen weighed 1,500 Gm. The patient was well and working two years later.

Revista Médica de Chile, Santiago

70:571-662 (Aug.) 1942. **Partial Index**

*Peripheral Insufficiency: Test for Its Evaluation. D. Urrutia, S. Vaisman and S. Rapaport.—p. 597.
Examination of Fundus of Eye: Hypertensive Retinopathy. S. Vaisman.—p. 626.

Peripheral Shock.—Urrutia and his collaborators utilized the Lewis and Perry epinephrine test in a group of 350 persons. The method determines the state of contractility of the cutaneous capillaries. Normal contractility of the cutaneous capillaries oscillates between 7 and 8 cm. of mercury. The persons observed included normal persons and patients with decompensated heart, with infections and in postoperative collapse. The contractility of the cutaneous capillaries was normal in 155 normal persons and in 36 patients with decompensated heart (from 7 to 8 cm. of mercury). The contractility was diminished (5 cm. of mercury) in patients with infections and in those with postoperative shock. The test gave normal figures for patients subjected to minor operations and not exhibiting postoperative shock. The test is more sensitive than the mea-

surement of the venous pressure in the diagnosis of peripheral collapse. The test is also of value in the diagnosis of peripheral collapse due to failing heart. These observations indicate that peripheral collapse in the course of infection or after operations is caused by changes in the tonus of the cutaneous capillaries.

70:665-732 (Sept.) 1942. **Partial Index**

*Surgical Treatment of Angina Pectoris. R. Valdivieso, A. Alonzo V. and P. Toledo A.—p. 665.
Evolutive Modes and Laboratory Aspects of Early Interarsenotherapeutic Jaundice.—H. Alessandri and H. Ducci.—p. 673.
*Subclinical Cardiac Disturbances in Chronic Tonsillitis. L. Herve, D. Fuenzalida, S. Brodsky y Correa.—p. 679.
*Acute Neuritis and Neuromyelitis. Maria Freile and S. Donoso.—p. 685.
Clinical Study of Trichinosis. H. Alessandri and A. Neghme.—p. 690.
Acute Thromboarteritis and Embolisms of Extremities. M. Casanueva Del C. and A. Velasco S.
Interesting Technic of Roentgenologic Study of Neck of Femur; Technic of Dooley and Its Surgical Applications. M. Casanueva Del C. and I. Lacasie.—p. 699.
*Possible Chronic Intoxication by Manganese. M. Kaffman and S. Donoso. —p. 708.

Surgical Treatment of Angina Pectoris.—Of the 4 methods advocated in the surgical treatment of angina pectoris, sympathectomy, thyroidectomy, revascularization of the myocardium and paravertebral alcoholization, Valdivieso and his associates emphasize the last, pointing out that alcoholization or paravertebral block is a simple intervention which does not involve risks and disadvantages of the other methods. They describe their experience with paravertebral alcoholization in the treatment of 6 men aged between 42 and 61. Five of the patients had been treated for syphilis and all of them had received medical treatment for angina, from which they had suffered for from two to five years. Five patients obtained immediate relief; the sixth was free from pain on the third day after alcoholization. The intercostal pain resulting from the intervention may be confused with the anginal pain. Administration of glyceryl trinitrate will aid in differentiating the two, since it has no effect on the neuritis. Effects of alcoholization in 2 cases persisted for six months and in 2 others for a year or more; the other 2 cases have been under observation for only one month. The authors review the experiences of other observers and discuss some of the complications that may result, such as pneumothorax, pleural effusion, the Bernard-Horner syndrome, medullary accidents and intercostal neuralgia. They conclude that the paravertebral block by alcoholization is the most innocuous method of providing lasting relief to patients with angina pectoris and suggest that the treatment be extended to other types of cardiovascular pain, such as aortalgia.

Subclinical Cardiac Disturbances in Chronic Tonsillitis.—Herve and his associates point out that in the study of the pathogenesis of rheumatic heart disease it is evident that the role of the infectious focus, particularly that of the tonsils, is estimated variously by different authors. They studied two groups. One comprised 110 patients sent to them from the otorhinolaryngologic clinic, nearly all less than 20 years of age, whose disorder was diagnosed as chronic tonsillitis. The other group comprised 50 rheumatic patients who had undergone examination of the rhinopharynx by a specialist. Cardiovascular examination in the course of tonsillitis, particularly in the recurrent attacks revealed the existence of subclinical cardiopathy in 12.8 per cent of the cases. Examination of the rhinopharynx in rheumatic disease disclosed the presence of a tonsillar focus in 66 per cent of the cases. From the analysis of the two groups it appears that a relationship exists between the rheumatic disease and the active tonsillar focus. This is manifested by allergic phenomena or by direct or indirect microbic action. When a patient with tonsillitis has a sedimentation rate of over 50 mm. an hour and a leukocytosis of more than 12,000, it is probable that rheumatic disease is developing. Electrocardiographic changes related to the duration and intensity of the rheumatic process appearing in the course of tonsillitis suggest the existence of active rheumatic disease. Tonsillectomy of rheumatic patients should be performed only after signs of activity have subsided. The administration of sulfonamide compounds before and after tonsillectomy appears to be an effective method of preventing reactivation. Tonsillectomy is beneficial for the patient with cardiac rheumatism provided the condition of the tonsil is considered. Tonsillectomy does not modify the cardiac lesions caused by the rheumatic disease. Benefits obtained in a large percentage, but not in all, are diminution or cessation of rheumatic activity in its cardiac or articular manifestations, reduction or disappearance of cardiac insufficiency and possibly prevention of the development of endocarditis lenta. Some patients obtain no benefit from tonsillectomy, but it is impossible to foretell this.

Acute Neuritis and Neuromyelitis.—Freile and Donoso observed that cases of acute myelitis of unknown etiology were comparatively frequent in their service. They describe 5. The first patient, a man aged 56, presented features of an ascending myelitis and died on the third day. Necropsy disclosed a microscopic abscess in the lateral funiculus of the lumbar part of the spinal cord. The presence of this abscess seems to indicate that the myelitis was of pyogenic origin. This, however, could have been due to medullary softening, which is capable of producing the same appearances, and the abscess was aseptic. Since the necropsy revealed no other septic focus, the authors think that a neurovirus was the etiologic factor. Necropsy also disclosed signs of an old meningitis probably of syphilitic origin. They point out that chronic or subacute meningitis is a predisposing factor in ascending myelitis. Three patients between 17 and 33 years of age suddenly developed paralysis of the lower extremities with intense thoracic and lumbar pain and loss of control of the vesical and rectal sphincters. One of these patients died. In view of the absence of morbid antecedents it is assumed that a neurovirus played an etiologic role. The fifth patient, a man aged 44, developed ascending myelitis of Landry's type after having received antirabic treatment. The paralysis persisted for a month, at the end of which time voluntary motion of the limbs returned. The frequency with which neuritic and paralytic symptoms appear in connection with antirabic treatment is estimated variously at 1 in 1,000 or 1 in 5,000 cases. In 25,372 cases in which the slow method of treatment was employed, not a single complication resulted; whereas, with the superintense treatment, one paralytic accident can be expected in every 30 cases. Some observers ascribe these manifestations to the virus of the diseased animal having inflicted the bite, whereas the majority ascribe it to the fixed virus inoculated therapeutically.

Chronic Intoxication with Manganese.—Kaffman and Donoso report that a man aged 64, three months before hospitalization, developed symptoms indicative of manganese poisoning. He had worked in a mine warehouse, and there was some probability that he had had contact with manganese. The disorder took an unfavorable course and the patient died. The microscopic pictures of the brain suggested two possible diagnoses: (1) vascular cerebral syphilis of the noninflammatory type as described by Alzheimer and Nissl and (2) chronic intoxication by lead or manganese, the two conditions causing almost the same microscopic changes. On account of the war the activity in the manganese mines has increased greatly and inspection revealed that the incidence of manganese poisoning is comparatively high among the workers. In one mine 15 of a total of 200 workers had become completely incapacitated by manganese poisoning. The men worked without masks in an atmosphere densely charged with manganese dust. In other mines no cases of poisoning were apparent. Nearly all the miners with manganese poisoning presented the typical disturbances in their walk. Next in importance are the psychic symptoms in the form of attacks of excitation, depression, unmotivated laughter and even true demented states.

CORRECTION

Syndrome Characterized by Gynecomastia.—In the abstract of this article in the Current Medical Literature on page 152 of THE JOURNAL of January 9 the phrase "increased excretion of estrogenic substance" (appearing in two places) should read "increased excretion of the follicle stimulating hormone"; also in the sixth sentence the word "probable" should read "improbable."

Book Notices

Surgery of Modern Warfare. Edited by Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London. Volumes I and II. Compiled by Seventy-Two Contributors. Second edition. Cloth. Price, $20. per set. Pp. 480: 481-1000, with 919 illustrations. Baltimore: William Wood & Company, 1942.

This two volume work, a compilation from some sixty-five hand picked contributors, brings modern war surgery up to date. It represents British surgery at its best and provides information quite different from that ordinarily found in the conventional textbook. Though the work depicts actual wartime surgical practice, it somehow conveys the impression of current experience—timely, new, nascent, living and dynamic in nature, progessive and undergoing rapid development. Unquestionably time, future experience and analyses of results will furnish more final values relative to war surgery, but nothing in the future can rob this work of its present ability to satisfy the reader of today. The book is actually compelling in its interest, so that the reader finds himself thumbing the pages, consulting the index, looking up one subject after another, in order to obtain the latest word on methods, procedures, points of view and opinions.

The volumes are beautifully and lavishly illustrated, thereby abbreviating the text through the avoidance of thousands of descriptive words. The illustrations themselves offer a liberal education in modern surgery. If indelibly transposed to "memory's wall," such pictures should result in better surgeons and better surgery, through improving operative technic and clinical judgment.

These two volumes cover all kinds of war wounds resulting from modern warfare. In all there are some nineteen sections and an appendix:

Section	I.	Wounds: General Considerations.
Section	II.	Wounds: General Operative Considerations.
Section	III.	Wounds: Special Infections.
Section	IV.	Wounds: Special Considerations.
Section	V.	Wounds of Blood Vessels.
Section	VI.	Wounds of the Head and Neck.
Section	VII.	Wounds and Injuries of the Spine.
Section	VIII.	Wounds of the Trunk.
Section	IX.	Further General Principles.
Section	X.	Burns and Frost-Bite.
Section	XI.	Peripheral Nerve Injuries and Wounds of Tendons.
Section	XII.	Methods of Immobilizing the Limbs.
Section	XIII.	Wounds of Bones and Joints.
Section	XIV.	Wounds of the Hand and Foot.
Section	XV.	Amputations.
Section	XVI.	Otorhinolaryngology in Relation to War Injuries
Section	XVII	Wounds of the Eye and Orbit.
Section	XVIII.	Surgical Diseases Encountered in Subtropical Countries.
Section	XIX.	Administration.
Section	XX.	Appendix.

While all the sections are probably equally good, especial attention might be called to the unusual excellence of certain chapters which should prove a material aid to all surgeons. "Shock and Its Treatment" (chapter V) by Ernest Finch admirably presents present conceptions. This chapter, like many others in the textbook, covers what is definitely known and then under a separate heading discusses the problems which are still controversial in nature. "Skin Grafting in Wounds Involving Skin Loss" (chapter XIX), written by A. H. McIndoe, reveals the great potentialities of skin grafting in relation to reconstructive surgery. Likewise "Wounds of Arteries" (chapter XXIII), by J. R. Learmonth, covers a vast and important field adequately and within a few pages. "Wounds of the Face and Jaws" (chapter XXX), by James B. Macalpine, is excellent. Seldom does one have the opportunity of reading a treatise on the important phases of the treatment and management of wounds of the face, jaws and neck that deals so practically and efficiently with the subject. A series of approved procedures are detailed, described and outlined, with effective drawings which clarify and illustrate the subject.

This book depicts a new world in war medicine and surgery. It seems to give just what the reader wants to know. It will prove of great value to military surgeons throughout the world, and especially to those in America who are just entering on their military service. Because of its illustrations it should be of special value to those engaged in teaching the surgery of modern warfare. The work is of unique value today and will always remain a valuable asset to any medical library.

Dr. Hamilton Bailey is to be congratulated on his selection of contributors, on the arrangement and presentation of the subject matter, and on the so timely production of so important a work on the surgery of modern warfare.

Human Pathology. By Howard T. Karsner, M.D., Professor of Pathology, Western Reserve University, Cleveland, Ohio. Sixth edition. Cloth. Price, $10. Pp. 817, with 484 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1942.

The first edition appeared in 1926; a printing of a sixth edition within sixteen years speaks well for the merits of this standard textbook. The new edition is in many respects a new work. It has been extensively revised and large parts have been entirely rewritten. Much new material has been included, but there also has been much judicious pruning. The format of the book has been changed; it is less bulky, the pages are larger, and for greater ease of reading it has been printed two columns to the page. More than one hundred new illustrations have been added or substituted for less instructive ones. As examples of noteworthy changes in the text may be cited the discussions of vitamin diseases, edema, shock, spirochetal diseases, rickettsial diseases, the viruses, infectious granulomas, neoplastic diseases, the pneumonias, anemias, tumors of the endocrine glands, tumors of bones and synovia, and virus diseases of the central nervous system. The obvious care the author has given to this revision is reflected in the well chosen bibliography at the end of each chapter. Nearly seven hundred new references have been inserted, and many of the older references have been deleted. The greater majority of the references now are to readily available articles in English. Despite the many changes, the distinctive features of Karsner's book have been retained. As in the first edition, the book presents morphologic alterations wrought by disease in relation to their functional significance. The point of view throughout the book is thoroughly modern. The work can be warmly recommended to medical students as a sound guide; the mature practitioner of medicine will find it a good work of reference.

Adventure in Blood Transfusion. By Bertram M. Bernheim, M.D. Cloth. Price, $2.50. Pp. 182, with 9 illustrations. New York: Smith & Durrell, Inc., 1942.

Never before has the layman shown such personal interest in the subject of blood transfusion. The yearly number of transfusions has steadily mounted in the last twenty-five years. The development of blood banks in this country has involved thousands of nonprofessional donors. At this writing over 1,200,000 persons have given blood or plasma for the armed forces. Developments in this field have received liberal recognition in the newspapers and magazines; some of the feature articles have been models of exposition of medical subjects for the general public. One cannot help being impressed with the specific knowledge possessed by the layman about blood transfusion. Considering this huge backlog of popular interest, it is reasonable to suppose that a book on the subject would have a warm reception and serve a useful purpose. The modern blood donor wishes to know more about the four blood groups, about their detection and about the applications of this knowledge to medicine, biology and the law. He wishes information and reassurance relative to the effect on the donor of giving blood. He is also interested in the use of blood transfusion in military medicine because he is being asked to contribute his blood for that purpose. He is unaware of the long and romantic story of blood transfusion, which would make eminently readable material for the person with an interest in history but without medical background.

This book, it is to be regretted, is not such a book. Written by a surgeon who developed a method of artery to vein anastomosis in 1909, it is preoccupied with his personal experiences with a procedure which rapidly waned when sodium citrate was introduced as an anticoagulant a few years later. The layman will not find in it the answer to most of the common questions which he asks. Only twenty-three pages are devoted to a desultory sketch of the two hundred and fifty year history of the

subject. The bulk of the book, one hundred and fifty-two pages, is occupied by a rather uninteresting case by case report of the development of the method of direct transfusion which the author devised and would not have us forget. A chapter on the role of blood transfusion in the first world war takes only nineteen pages but is sufficiently interesting to be the only part of the book which the reader would like to see expanded. The conclusion is a wofully inadequate chapter of nine pages on the tremendous advances made in the last twenty-five years which betrays the fact that the author has long been dissociated from the field.

Although the general tone is not especially modest, here and there curiously frank and damaging admissions are interspersed. The author states in one place that he published a description of the transfusion cannulas three months before he attempted to use them in a transfusion. He also acknowledges that he was not familiar when he performed his first transfusions with the work of his classmate W. L. Moss on the classification of the blood groups and the necessity for performing compatibility tests.

The style in which the book is written is frequently rhetorical and always circumlocutory. The medical reader is occasionally annoyed by the capitalization of such terms as melena neonatorum and Bright's disease. It is difficult to understand the reason for including thirty-four references to the medical literature in a book avowedly written for laymen. It is feared that the reader who seeks gratification for his normal curiosity will be sadly confused by the discussion of outmoded technics and will lay down the book with his questions unanswered.

The Surgery of Pancreatic Tumors. By Alexander Brunschwig, M.S., M.D., F.A.C.S., Professor of Surgery, University of Chicago. Illustrated by Gladys McHugh. Cloth. Price, $7.50. Pp. 421, with 123 illustrations. St. Louis: C. V. Mosby Company, 1942.

This monograph is an important milestone in the surgery of the pancreas. The author, whose keen interest in this field is well known, has summarized and brought down to date the pertinent surgical and pathologic literature of pancreatic tumors. This task in itself is an undertaking of some magnitude, a labor which the author has done well.

The surgical problem presented by tumors of the head of the pancreas is particularly the concern of this monograph. The development of knowledge concerning vitamin K, and the significant relationship of this vitamin to cholemic bleeding, has been an important item in lending impetus to the formidable surgery necessitated by tumors of the head of the pancreas.

Any one who essays to deal with the problem presented by pancreatic tumors will do well to give serious study to this effort of Brunschwig. There have been surgical monographs written on the pancreas before. This is the first time, however, that an author has given special consideration to the problem of the surgery of pancreatic tumors in a monograph of this sort. The nature of the surgery required in many such instances truthfully may be described as being heroic. Patients whose pancreatic ducts are not reimplanted into the bowel and for whom partial gastric resection is done as well—such patients, surviving the procedure for some time, should constitute interesting subjects for nutritional studies.

Roentgen Treatment of Diseases of the Nervous System. By Cornelius G. Dyke, M.D., F.A.C.R., Associate Professor of Radiology, College of Physicians and Surgeons, Columbia University, New York, and Leo M. Davidoff, M.D., F.A.C.S., Chief, Department of Surgery, Attending Neurological Surgeon, Jewish Hospital of Brooklyn. Cloth. Price, $3.25. Pp. 198, with 35 illustrations. Philadelphia: Lea & Febiger, 1942.

Here is a brief compilation of the results of radiation on brain and spinal cord tumors together with effects on other miscellaneous lesions of the nervous system. Also included is a survey of the literature on previous experiences with radium and x-ray therapy in nervous diseases. Since the progress of radiation therapy is of recent evolution, this book is timely and serves a useful purpose in realining present knowledge on this subject. The more somber aspects of brain tumors are partially dispelled, but it remains clear that although radiation therapy offers striking and effective amelioration in many cases it cannot be considered a curative agent. The best and most comprehensive chapter deals with pituitary adenomas and is particularly instructive on present day management of these tumors. The book is augmented by a comprehensive bibliography which should prove an excellent reference source. There are several defects which are immediately obvious. For one thing, the authors are guilty of serious error in indicating x-ray dosage as "total dose" or summation of the roentgens given to each of several ports. The value of some of the charts is therefore materially altered. True tumor dosage is not accurately reflected by "total dose." In addition, the book lacks fluency, which might easily have been imparted by careful editing.

Starling's Principles of Human Physiology. Edited by C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S., Jodrell Professor of Physiology in University College, London. The Chapters on the Special Senses Revised by R. Hartridge, M.A., M.D., Sc.D., Professor of Physiology at St. Bartholomew's Medical College, London. Eighth edition. Cloth. Price, $10. Pp. 1,247, with 673 illustrations. Philadelphia: Lea & Febiger, 1941.

This edition of Starling's textbook is much improved over the preceding one in that it gives evidence throughout of more care in preparation and selection of material. The rare feat of successfully integrating the results of new investigations with the classic pictures of function has been successfully accomplished without any ruthless iconoclasm. Of course, it is doubtful whether we have a right to expect any one author, or even any small group of authors, to be able to write in one volume a well balanced textbook of physiology and keep up, at the same time, with the mass of new material being published. While the section on the central nervous system, as well as that on special senses, has been revised thoroughly, that devoted to nutrition is entirely inadequate when one considers the importance this has come to assume in modern civilization. Illustrative material throughout is excellent. The subject index is very complete, but a bibliographic index would be helpful. Specific references are paged with corresponding subject matter, and general references are grouped at the end of chapter or section. The entertaining style characterizing the original edition has been successfully retained and extended in this edition, which the reviewer considers by far the best of the series for the use of students or physicians.

Apendicitis crónica: Consideraciones anátomo-clínico-quirúrgicas. Por el Dr. Fernando M. Bustos, profesor adjunto de clínica quirúrgica de la Facultad de medicina de Buenos Aires. Paper. Pp. 130, with 24 illustrations. Buenos Aires: Editorial "El Ateneo," 1940.

The author emphasizes the importance of recognizing and treating associated gastrointestinal lesions, particularly those of the colon associated with chronic appendicitis. He attempts to clarify diagnostic confusion existing in this pathologic entity. The relatively high percentage of failures encountered in his series of 535 surgical cases, despite a well planned preoperative and postoperative medical treatment of the associated pathologic condition, is pointed out. The diagnostician, the author stresses, should make every effort to rule out the possibility of genital pathologic change, since the pain of chronic appendicitis is aggravated during the menstrual periods in the majority of cases. On the whole the book offers interesting reading material particularly to the young surgeon.

Recent Advances in Medicine: Clinical, Laboratory, Therapeutic. By G. E. Beaumont, M.A., D.M., F.R.C.P., Physician to the Middlesex Hospital, London, and E. C. Dodds, M.V.O., D.Sc., M.D., Courtauld Professor of Biochemistry in the University of London. Tenth edition. Cloth. Price, $5.50. Pp. 440, with 45 illustrations. Philadelphia: Blakiston Company, 1941.

Most important additions to this volume include the considerations of the sulfonamides, the vitamin B complex and vitamins E, K and P, new methods of treating diabetes, gastroscopy, the uses of diethylstilbestrol, the uses of electroencephalography and of phenytoin sodium in epilepsy, the employment of heparin, sternal puncture and plasma transfusion. In order to make use of much new material, a section on basal metabolism previously included has been omitted.

The Essentials of Emergency Treatment. Edited by Herbert Thoms. Cloth. Price, $2. Pp. 144. New Haven: Connecticut State Medical Journal, 1942.

This volume includes a series of essays by a number of Connecticut authors dealing with various factors in emergency medical service. The opening chapter describes the organization and function of this service in Connecticut and is followed by a number of chapters on all of the methods of emergency surgery. This condensation will be found of interest to physicians elsewhere who are concerned with these problems.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INHERITANCE OF ALLERGIC TENDENCIES

***To the Editor:*—Is the disposition to allergic conditions transmitted as a dominant or a recessive characteristic in the mendelian sense? Where can I find literature pertaining to this problem?** **M.D., New York.**

ANSWER.—The exact mode of inheritance of allergy has been in dispute for many years. All investigators, however, agree that no single allergic disease is transmitted as such. That which is transmitted is the predisposition to allergic conditions —the tendency to become hypersensitive. The actual appearance of clinical hypersensitivity depends mainly on environmental factors.

Several investigators have conducted extensive studies to determine the genetic basis for allergy. Adkinson concluded that it is inherited as a simple autosomal recessive. Her report, taken from the genetic standpoint, practically eliminates the possibility of a simple dominant. Cooke and Vander Veer, Spain and Cooke, and Bucher and Keeler found that their figures agreed better with a dominant mode of inheritance, although on analysis their findings are in accord with neither the dominant nor the recessive theory. Bray of England has a substantially different report; this is possibly due to the fact that American studies include statistics on large numbers of hay fever sufferers. In England, because of the absence of ragweed pollen, there is far less hay fever. Richards and Balyeat believe that allergy is a partial dominant. All these studies show one main thing: allergic inheritance is not a simple mendelian character. Either there are accessory factors or complete dominance is lacking.

Ratner and his associates take a stand opposite to that of most allergists; they assume that allergy is not an inherited character but is due to placental transmission.

It has been noted in almost all studies that allergic individuals with a bilateral positive family history of allergy have a much earlier average age of onset than those with unilateral histories, who in turn have an earlier average age of onset than those with a negative inheritance.

On the basis of these facts, Wiener, Zieve and Fries have postulated a new theory which involves incomplete dominance. They assume that one pair of alleles (which they call genes H and h) determines allergic inheritance. The dominant gene H is for nonallergic individuals; h is the gene for allergy (recessive). Persons with HH have no allergic predisposition and are considered normal. All hh individuals are allergic, and Hh individuals are either allergic or nonallergic. All the Hh individuals, whether they ever develop any form of allergic disease or not, can still transmit the gene h to their offspring. This theory, then, is the only completely adequate explanation thus far advanced which accounts for the large number of allergic persons with negative family histories.

Wiener, Zieve and Fries divide all allergic persons into two groups according to the age of onset, with the dividing line at 10 years of age. Those with the earlier age of onset are the hh individuals. The 18 per cent of the Hh individuals who develop allergic manifestations have the later average age of onset.

Greater attention should be paid in future studies to the variations of age of onset. Females have a later average age of onset than males; each allergic manifestation has a slightly different average age of onset. Hay fever is apt to begin later than asthma, probably because exposure to pollen is intermittent. Thus it would seem that the dividing line between the two groups of allergic individuals should not be set at 10 but should rather assume the form of a sliding scale, varying with individual manifestations and with sex.

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SPINAL FLUID CHANGES IN MULTIPLE SCLEROSIS

***To the Editor.*—The textbooks state that in disseminated or multiple sclerosis the spinal fluid yields a positive colloidal gold curve in about 50 per cent of the cases; some also state that the Wassermann reaction of the spinal fluid is negative. I should like to know the incidence of positive Wassermann precipitin or agglutinin tests of the blood for syphilis in multiple sclerosis.** **M.D., Massachusetts.**

ANSWER.—Demonstrable changes in the colloidal gold reaction in multiple sclerosis were shown in nearly 75 per cent of the patients examined according to the investigations by Merritt, who based his findings on a personal examination of 100 cases plus 700 more in the literature. He found a first zone curve in about 25 per cent, a mid zone curve in another 22 per cent, and some slight abnormality in the fluid in a further 24 per cent. It is the first zone curve in the cerebrospinal fluid from cases of multiple sclerosis plus the absence of other abnormalities that is so striking in this disease. The cells and amount of protein may be normal and the Wassermann test negative with a strong first zone colloidal gold test. Such a group of findings is not characteristic of any other disease. Positive Wassermann reactions do not occur in either the blood or the cerebrospinal fluid in multiple sclerosis. If the Wassermann test is found positive in an untreated case, one would always expect other changes in the spinal fluid indicative of syphilis to be found also. The only exception would be if a patient had been thoroughly treated and the other tests had become negative, leaving a positive or a weakly positive Wassermann reaction as the last evidence of syphilis. There should be no confusion between a spinal fluid in a case of multiple sclerosis and a fluid from a case of neurosyphilis, for with active neurosyphilis the cells and globulin are almost inevitably affected. There is no reason, moreover, to believe that the Wassermann or other reactions in the blood sometime would be positive in cases of multiple sclerosis. Neurosyphilis, however, with its many manifestations may produce a syndrome similar to that found in multiple sclerosis, thus confusing the differential diagnosis. One should not depend on cerebrospinal fluid findings alone, but the clinical history, neurologic examination and effects of treatment should all be taken into consideration in differentiating between the two diseases.

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STERILIZING QUALITIES OF FREE FLOWING STEAM EQUIPMENT

***To the Editor:*—I have a Rochester steam sterilizer in which I should like to sterilize towels and other cloth materials. Since this equipment does not produce steam under pressure but only at the temperature of boiling water, I should like to know how much time it would require to sterilize this material if it can be done at all.** **R. G. Wetterstroem, M.D., Olathe, Kan.**

ANSWER.—Moist heat at 100 C. suffices to kill the vegetative cells of bacteria in a short time; holding at that temperature for 3 to 5 minutes provides an ample margin of safety. Bacterial spores are considerably more resistant. The spore forming pathogenic bacteria to be considered are (1) the anthrax bacillus—spores killed in ten minutes; (2) the gaseous gangrene bacilli—the spores of Clostridium welchi are killed in five minutes, those of the other bacilli appear to be somewhat more resistant though precise data are lacking; (3) the tetanus bacillus—the resistance of spores is variable from strain to strain and usually given as fifteen to ninety minutes. Spores of saprophytic bacteria and higher fungi are much more resistant; the survival of such spores (as those of the botulinus bacillus) for twenty-four hours at 100 C. is not uncommon. In general, then, sterility is not attained by such treatment.

In the use of equipment such as that mentioned two points are to be noted: (1) penetration of cloth and similar materials by free flowing steam is considerably slower than by steam under pressure, packing is of primary importance and the period of sterilization must be regarded as beginning only when the center of packed material reaches the maximum temperature; (2) any statement as to the efficacy of free flowing steam in the destruction of bacteria applies only to normal atmospheric pressures; at an elevation of several thousand feet such treatment will accomplish little more than pasteurization.

LARVA MIGRANS OR CREEPING ERUPTION

To the Editor:—What is the distribution and approximate number (annual) of larva migrans (creeping eruption) in the United States?

N. E. Ruhl, M.D., Weatherford, Okla.

ANSWER.—The terms larva migrans and creeping eruption have been used to describe the disease caused by a number of different larvae which penetrate the skin. In the United States the causative organism is usually Ancylostoma braziliense and the disease is endemic in the southeastern and southern coastal regions, being of sporadic occurrence elsewhere. The highest incidence of the disease is in Florida, varying in different sections of the state.

Kirby Smith reported in 1925 an incidence of 2,500 cases covering a period of fifteen years in his practice in Jacksonville, many of his cases coming from central and western Florida, while in the past ten years 45 has been the average number of cases seen at the Miami City Clinic annually.

Creeping eruption has been encountered much less frequently in the Carolinas, Georgia, Alabama, Texas and Oklahoma than in Florida.

Reporting of the disease is not required by the health authorities, and a comparatively small number of the total of infestations occurring at any one time are seen by physicians; hence there is no true standard by which the annual incidence of the disease in the United States can be estimated.

TREATMENT OF LATE OSSEOUS SYPHILIS

To the Editor:—I should like to have an outline of the beginning treatment for tertiary syphilis involving the frontal and parietal bones. The patient is a woman aged 65 in good health otherwise. I do not know whether the condition is acquired or congenital. The eyes react to light and in accommodation. Neurologic signs are negative. The Kolmer and Kahn reactions are 4 plus, and there is the involvement of the frontal and parietal bones. Should she have any arsenical treatment or be kept on iodides, mercury and bismuth compounds?

M.D., Kansas.

ANSWER.—Information as to the treatment of late osseous syphilis may be obtained in chapters 15 and 17 of the "Modern Treatment of Syphilis," by J. E. Moore (ed. 2, Springfield, Ill., Charles C Thomas), in chapter 17 of "Modern Clinical Syphilology," by John H. Stokes (ed. 2, Philadelphia, W. B. Saunders Company), and in numerous other textbooks on the treatment of syphilis.

Speaking generally and in view of the patient's age, it would probably be wise to begin treatment with a course of eight to twelve weekly intramuscular injections of bismuth subsalicylate in oil, each 0.2 Gm., these injections to be administered deep into the muscles of the upper outer quadrant of alternate buttocks. Simultaneously the patient may be given 2 Gm. of potassium iodide three times daily, this amount of the drug being administered well diluted with water, milk or any other desired flavored substance after meals. There is no indication for the use of mercury in the modern treatment of syphilis.

On completion of the suggested course of treatment, and assuming that the patient's physical condition is normal except for the syphilitic lesion of the cranial bones, mapharsen may be given at weekly intervals, beginning for a patient of this age with a dose of 30 mg. administered by intravenous injection and with subsequent doses of 40 to 50 mg. each, depending on the body weight. A representative course of mapharsen would be from twelve to sixteen injections. This in turn should be followed by another course of bismuth and potassium iodide, as outlined.

The aim of treatment for a patient of this age is to give enough treatment to heal the lesions and to prevent their recurrence. For this purpose two courses of bismuth and the one of mapharsen recommended should be sufficient. The effect of this treatment on the blood test is a matter of no importance.

Again depending on the patient's general health and an estimate of her life expectancy, it would probably be desired to test the spinal fluid relatively early in this course of treatment and to base any further treatment than the amount suggested on the result.

EXPOSURE TO FUMES FROM HOT NITROGLYCERIN

To the Editor:—I am writing for information relative to the toxicity of hot nitroglycerin. I have come in contact with 2 or 3 persons who undoubtedly have suffered rather severe toxicity from inhaling fumes given off by this chemical, and I am unable to cope with this, as I do not know the contents of the poisonous gas; therefore I have no means of ascertaining a rational treatment for such patients. One patient has suffered a spinal cord lesion, simulating, if not the same as, multiple sclerosis. That I may not have erred in my diagnosis, I referred this case to the Barnes Hospital Clinic in St. Louis, and the diagnosis was confirmed as made by me. I shall thank you for any information you may be able to give me.

A. J. Butner, M.D., Harrisburg, Ill.

ANSWER.—At low temperatures, such as 50 C., the product of nitroglycerin evaporation is nitroglycerin. At higher temperatures some decomposition may take place with the formation of nitrous oxides along with the nitroglycerin vapors. This mixture of nitrous oxides and nitroglycerin may be expected at such approximate temperature level as 100 C. At much higher temperatures, but still below the explosion temperature, which approximates 250 C., more nitrous oxides are produced and correspondingly a diminution in the proportion of nitroglycerin. Both of these substances are highly toxic although their actions are dissimilar. The action of nitrous gases culminates in massive pulmonary edema. An earlier characteristic effect is the formation of methemoglobin. Less significant actions are related to the nitrites and are shared by nitroglycerin. Nitroglycerin as a liquid form is absorbable through the mucous membranes with readiness. Both nitrous oxides and nitroglycerin are dangerous when inhaled. As little as 2 mg. of nitroglycerin may cause severe poisoning. The foremost feature of acute nitroglycerin poisoning is violent headache. In chronic poisoning, blood cell destruction is prominent. The commoner symptoms, in addition to the headache, are visual disturbance, flushed face, tachycardia, nausea, vomiting, lowered blood pressure and excitability even to the point of mania. It is well known that some degree of habituation occurs, which tolerance is quite transitory being lost even over a two day weekend. To avoid this loss, nitroglycerin workers are likely to apply some nitroglycerin to their clothing, such as a hatband. While such procedure may prevent nitroglycerin headache, it will not prevent some other actions of nitroglycerin, such as blood destruction. Also this practice is harmful for the nitroglycerin worker's family and those about them, for example others on street cars, who being uninured may develop headaches from proximity. The occurrence of a chronic condition on the order of a spinal cord lesion, as mentioned in the query, is possible as a result of multiple cord hemorrhages known to occur in nitroglycerin poisoning. While there are chemical antidotes for acute nitroglycerin poisoning, real industrial prevention must center around the control of exposure through the elimination of cutaneous contact and opportunity for vapor inhalation, and alcoholic intake should be rigidly avoided. While the exact temperature is not mentioned in the query, the temperature should be kept as low as is compatible with industrial requirement, since high temperatures increase the dangers involved.

SEBACEOUS CYSTS OF CHIN

To the Editor:—A woman has many small sebaceous cysts about her chin incident to acne elsewhere on her face. Is there any means, other than mechanical, whereby these can be eradicated? I seem to have controlled to a large extent the further development of the lesions but I now appear to be faced with the need of removing these one by one by hand unless there is some effective wholesale method, such as use of the x-rays.

Ursula G. Mandel, M.D., Los Angeles.

ANSWER.—This type of case is always difficult to treat. Roentgen therapy seems to be the method of choice. Eight to ten treatments given at weekly intervals, with a dosage of 75 to 80 roentgens, unfiltered, should be given. Most cases of this type will respond to this form of treatment.

CARBON DIOXIDE COMBINING POWER OF PLASMA

To the Editor:—In Queries and Minor Notes in The Journal, Dec. 12, 1942, the explanation of the decrease in the carbon dioxide combining power of a plasma after eighteen hours in the ice box is assuredly incomplete. For years in my courses in physiology for medical students I have pointed out that the determination of the carbon dioxide combining power of the plasma of blood which has stood for a number of hours even in the ice box may give a false low reading as the result of glycolysis with lactic acid formation. The lactic acid, of course, interacts with the alkaline buffers of the blood and thus reduces the alkali reserve and hence the carbon dioxide combining power of the plasma. Glycolysis can be prevented by the addition of sodium or ammonium fluoride to the blood. This problem is adequately discussed in Peters and Van Slyke's "Quantitative Clinical Chemistry" (Baltimore, Williams & Wilkins, 1932 and 1935, vol. 1, p. 129, and vol. 2, p. 62).

George E. Wakerlin, M.D., Chicago.